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## PROJECTED EXPEDITIONS TO THE NORTH POLE.

ENGLISH—GERMAN—FRENCH.

HITHERTO, with the exception of a few adventurous and successful expeditions of research carried out by the Russians and Americans, Arctic and Polar discovery has been almost peculiarly the province of British enterprise. The two Rosses, Parry, Franklin, Beechey, Back, Moore, Kellett, Belcher, Collinson, Austin, McClure, McClintock, Inglefield, Ommanney, and Sherard Osborn have more particularly rendered their names illustrious by their brilliant and daring achievements.

The almost special object of these expeditions has, however, hitherto been the discovery of a north-west passage from the Atlantic to the Pacific Ocean—a problem solved at last by the perseverance of Collinson, McClure, Austin, and Ommanney, but destined to be carried out, in as far as actual communication is concerned, by an American, and, it is to be hoped, an Anglo-American—Interoceanic Railway. The melancholy

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and disastrous result of Sir John Franklin's last expedition has been the cause, that since the return of the various expeditions sent out in search of the remains of our gallant countrymen all new projects have for a time been utterly abandoned.

In 1865, however, Captain Sherard Osborn, encouraged by the discovery of a supposed Polynia or open sea, said to abound in animal life, north of Greenland, revived the old project of a journey to the North Pole. This project, at first favorably received, was opposed by the German geographer Petermann, who advocated the old line of navigation adopted by Barentz between Spitzbergen and Nova Zembla. And still more recently a French navigator—Captain Gustave Lambert—has advocated an attempt to reach the North Pole by Behring's Straits, beyond which it is supposed, from the researches of Wrangel, Anjou, Kellett, Moore, and others, there exists land to the northward, and an open sea to an unknown extent westwards. A subscription-list to raise 600,000 francs (25,000*l.*), the minimum which is deemed

necessary to carry out the proposed object, has been now opened for some time; and, supported as the project is by the Imperial Government and the Geographical Society of France, there are reasons to hope that an expedition which cannot but be productive of welcome additions to our geographical and scientific acquaintance with a very interesting portion of the Arctic Ocean—that which extends between Herald and Plover's land and islands, recently claimed as a new discovery by the captain of an American whaler, and Liaknow Islands or New Siberia, supposing even that the actual North Pole be neither reached nor crossed—will be successfully carried out. It is in our memory that the discovery of the North Magnetic Pole, on the shores of Boothia, was celebrated at Vauxhall by scenic effects lit up by fireworks, in which a British sailor, after the transpontine idea of what that admirable character is supposed to be, planted the British flag upon the real pole, to the plaudits of a vast assemblage of ignorant Cockneys. It would be passing strange if, after all that has been accomplished by British perseverance, endurance, and skill, we should have to assist at some still more brilliant ceremony in the Champ de Mars in commemoration of the positive passage of a French ship over the North Pole, or the planting of the tricolor flag on the earth's axis!

Captain Sherard Osborn first called the attention of the Royal Geographical Society to what he termed the perfect practicability of an exploration of the blank space around our Northern Pole on the 23d of January, 1865. The arguments for this practicability were founded upon the presumed existence of an open sea in the extreme north; Captain Osborn ranking the discovery of a supposed Polynia, and the fact that Providence has peopled the Arctic regions to the extreme latitude yet reached, and that the animals upon which they subsist are there likewise, in winter as well as summer, as one, with the Magnetic Pole and the course of the gulf and ice streams, of the great results of the labors and researches of Arctic explorers, and which have been sneered at by some as merely adding so many miles of unprofitable coast-line to our charts.

The existence of an open Polar sea has been ably combated by Dr. Rink in the Royal Geographical Society's Journal, xxviii. p. 272 *et seq.*; but Mr. Markham has, on the other hand, collated a table (Proceed. R. G. S., vol. ix. No. ii.) showing that many navigators have at various times been between five or six hundred miles of the Pole. It appears, indeed, from this table that stout old Dutch and English skippers vowed they had been as far north as the 88th deg., some to 83 deg. north (Sir Edward Parry's extreme in the boats *Enterprise* and *Endeavor* in 1827 was 82 deg. 45 min. north), and many into the 82d parallel; indeed, one old sailor declared to Master Moxon, "hydrographer to Charles II. of glorious memory, that he had sailed two degrees beyond the pole! But it is only fair to add that this was said in dreamy Amsterdam, over strong Dutch beer."

The whole gist of the comparative value of Captain Sherard Osborn's English, Augustus Petermann's German, and Gustave Lambert's French projects, lays in the question of the direction in which a Polar expedition should be undertaken with the least risk and expense, and the greatest probability of success, and in the mode in which such an exploration should be carried out. Sir Edward Parry in his boat expedition from Spitzbergen in 1827 stood upon a floating sea of ice on the night of July 22d, being then in latitude 82 deg. 45 min. north, exactly four hundred and thirty-five geographical miles from the Pole. He was constrained to give up the attempt, simply, it is said, because the ice was being swept faster to the south than his men could drag their boats to the north. Captain Osborn says "simply," but if we can conceive difficulties in the way of an approach to the North Pole, the first would be an impenetrable barrier of land or ice, which could be triumphed over by sledges or other means, and if on terra firma possibly with success; but if on ice, and the ice travels south faster than a sledge can proceed northwards, it is impossible to imagine a more insuperable difficulty to progress in the latter direction. The fact is, however, that sledge expeditions should be undertaken in winter—"winter black as danger, and terrible as night"—for past experience

tells us that, instead of starting on such a journey in June, Parry ought to have wintered in Spitzbergen, and started for the north in February; and such is the perfection to which Arctic sledge equipment has been brought, that the weights would be infinitely less for the men to drag, whilst the provisions would last for months instead of weeks.

Captain Sherard Osborn, however, disapproves of efforts being made to reach the polar area by sledges from Spitzbergen, on the ground that there are no known lands north of the island, and consequently no fixed points for depôts of provisions; whereas, in Smith Sound, we have a starting-point one hundred and twenty miles nearer to the Pole, and there is good ground for believing in a further extension of continents or islands to the north. The floes which drift down upon Spitzbergen from the north contain no icebergs proper in their embrace. This tells us that no extensive lands lie upon that meridian; for the iceberg is a creation of the land, born of a glacier, and not of the sea; whereas these icebergs abound in Smith Sound; and the glaciers, as Kane advanced northward, appeared to increase rather than diminish in extent, which would not be the case if the land ended abruptly near the Humboldt Glacier, in 80 deg. north latitude. Those vast accumulations of snow and fresh-water ice, designated by the latter term, and their beautiful creations the iceberg, tell us of great lands with lofty mountains and deep valleys, retaining the moisture and snow-drifts of ages, and promise that continuity of coast-line, and that frozen seaboard, which it is declared is alone needed to enable our explorers to reach the Pole in safety. Greenland, therefore, and not Spitzbergen, is the direction Captain Sherard Osborn advocates.

It is not, at the same time, the gallant captain observes, that there is nothing to reward the explorer in the direction of Spitzbergen or Nova Zembla, for there is much yet to be seen and done there in scientific research. The bugbear of Arctic navigation is being gradually dispelled. "A Cruise in High Latitudes," and "A Season among the Walruses," encourage us to hope, that where yachtsmen have not hesitated to go for pleasure, and where poor Nor-

wegian fishermen yearly sail in almost open boats for hides, ivory, and the more precious livers of Arctic sharks, which produce the article known in commerce and at the bedside of the sick, as "pure cod-liver oil," it is possible others will yet wend their way for love of science, and add to our knowledge of the laws of electricity, light, magnetism, temperature, and winds. If this applies to the Nova Zembla Sea, so it does also with additional strength to the Siberian Polynia, or open sea, the navigation of which to the North Pole is advocated by the French geographers.

Captain Osborn argues that apart from mere proximity to the Pole, there are other conditions which recommend the route via Smith Sound. A considerable extent of water was found to exist at Cape Constitution in the early summer. Recent Arctic explorations have shown that this is no great novelty. Dr. Kane believes this water to be very extensive, but Captain Osborn is sceptical upon that point, and he says as the Pole is within reach, whether Kane's Polynia be great or small, he will not urge the facilities which open water offers to boat-navigation. The future explorer might hail open water if it were found to exist along the shores of Grinnell Land; but, if not, he would be well satisfied with plenty of ice, and merely pray that the mainland, or off-lying islands, should be found to exist as far as the 87th parallel. And there is, he holds, more chance—far more chance—of that being the case, than of any open sea round the Arctic Pole.

Kane's Polynia, it is admitted, exists, where there is a far greater abundance of animal and vegetable life than was found to exist round the "water-holes" of Regent's Inlet, Wellington Channel, or Lancaster Sound. The possibility, therefore, of future explorers of Smith Sound being able to vary their dietary with the flesh of deer, bear, seal, or wild-fowl, is an important recommendation to the route in question.

In this meridian, too, we find human life extending to a higher latitude than in any known direction. A fine tribe of Arctic savages was first discovered by Sir John Ross in latitude 75 deg. 35 min. north, longitude 65 deg. 32 min. west, in his voyage of 1818. Ross christened

this isolated section of the great Esquimaux race, "Arctic Highlanders." These Highlanders are a hearty, healthy race, who slay bear, seal, and walrus, with bone spears and harpoons, but they have no boats, and they believe it is all ice to the south of them! A beneficent providence has so arranged it that, from the action of oceanic currents, and the destruction of the ice-fields by the large icebergs thrown off from the glaciers constantly sailing through them, there is always, even in the depth of a polar winter, some open water to be found in the regions inhabited by these highlanders, and in it walrus, bear, and seal. Without this open water they would all perish in a single winter.

Captain Osborn lays stress upon the preference to be given to this route over any other, not only upon the existence of these Arctic Highlanders in high latitudes, and who could aid as hunters and sledge-drivers, but also upon the fact that the Danish settlements extend along the coast of Greenland as high as 72 deg. north. Kane, in open boats, carried off his men in safety to Upernavik, when it became imperative to do so; other navigators could do likewise, if any accidents occurred to their ships in Smith Sound.

Dr. Petermann argues against the route by Smith Sound that the seas east and west of Spitzbergen offer the shortest route to the North Pole from Great Britain, and that these seas form by far the widest, indeed, the only oceanic opening into the chief, the central polar regions, and to the North Pole. They offer, for that reason alone, the easiest and most practicable and navigable of all openings for vessels into the Polar regions.

The Spitzbergen seas are, according to the German geographer, more free from ice than any other part of the Arctic or Antarctic seas in the same latitude, the parallel of 80 deg. north being every year accessible, even to small craft, with certainty and safety. In Smith Sound the combined efforts of British and American expeditions have only reached to 78 deg. 45 min. north latitude in vessels, and to about 81 deg. in sledges.

English and American hydrographers, it is to be remarked upon this statement,

are at variance as to the latitude to be assigned to Cape Constitution and Cape Parry, the two extremes discovered by Kane. If the American computation is correct, Cape Constitution is in 81 deg. 22 min. north, and the point seen on the west land would be in about 82 deg. 30 min. north, or just four hundred and fifty miles from the Pole. But Admiral Collinson, Captain George, and Mr. Arrowsmith, place Cape Constitution in latitude 80 deg. 56 min. north, and crediting Morton's vision with a range of sixty miles, fixing Cape Parry in latitude 81 deg. 56 min. only, a distance of four hundred and eighty-four miles from the Pole. Captain Osborn very properly accepts this last estimate as the distance to be dealt with, and declares Cape Parry and Grinnell Land as his assurance of the perfect possibility of reaching the Pole.

Despite these most determined efforts, Petermann, however, goes on to argue, very little progress has been made in that direction since the days of Baffin, two hundred and forty-nine years ago, who, in 1616, attained about 78 deg. north latitude, nearly as far as the recent expeditions of Inglefield, Kane, and Hayes, though the two latter went with the avowed purpose to reach the North Pole.

From Spitzbergen to the northward the sea is encumbered more or less with drift-ice, which offers just as much or as little impediment to navigation as other seas of the like nature, for example, Baffin's Bay. From the concurrent testimony of the most recent, as well as former navigators, according to Petermann, much less ice is met with in the Spitzbergen seas during the spring and autumn than in the height of summer, and at certain times the seas are entirely free of ice.

A sea of the extent and depth as the one north of Spitzbergen (Sir E. Parry found no bottom with five hundred fathoms), swept by mighty currents, and exposed to the swell of the whole Atlantic, will never, according to the same writer, not even in winter, be entirely frozen over, or covered with solid ice fit to travel on with sledges, but will be more free of ice, and more open, than the ice-bound, choked-up labyrinth of the chief scene of the Franklin search, 20 deg.



south of the Pole. On the supposition that Captain Phipps's main or heavy ice extended to the North Pole, Sir E. Parry's expedition in 1827 was founded. Instead, however, of finding any solid ice upon which to reach the North Pole in sledge-boats, he found no heavy ice at all, but only loose drift-ice, half the thickness of that at Melville Island; so that he came to the conclusion "a ship might have sailed to the latitude of 82 deg. almost without touching a piece of ice."

Petermann (as does also Captain Jansen, a distinguished officer in the Dutch navy) attaches far more importance to the testimony of the old Dutch and English skippers than Captain Osborn. He believes that from Sir E. Parry's farthest point in 82 deg. 45 min. north latitude a navigable sea extends far away to the north, even to beyond the Pole; and he says the general correctness of the old Dutch navigators, and the non-discovery of any land, speak in their favor, as it is well known that navigators and maritime explorers are in general much more predisposed to discover land than to have to report upon the continuation of the sea.

But rejecting these old accounts altogether, Sir E. Parry's position in 82 deg. 45 min. north latitude, in a perfectly navigable sea, remains, he observes, an unassailable fact, from which point to the North Pole, a distance of only four hundred and thirty-five miles, cannot be more difficult to navigate than a like distance in Baffin's Bay, or in any other Polar sea of similar extent.

All facts connected with the geography of the Arctic regions, whether as regards the extent of actual exploration or the observations on the currents, climate, drift ice, and drift-wood, lead, he says, to the conclusion that the regions under the Pole, and as far as Spitzbergen, consist of an expanse of sea, and not land. But even if land should be found under the Pole, an expedition by way of Spitzbergen reaching it could extend the exploration by means of sledges; whereas sledge expeditions finding open water like that of Parry, or as in the case of the repeated attempts of Wrangel and Anjou in the Siberian Sea, would be defeated, and must inevitably fail, and return.

But it might be said in case of a sledge-party meeting open water, as in the case of Parry, and of Wrangel, and Anjou's expeditions in the Spitzbergen and Siberian Seas, would there not be much greater chance for their safe return with land in their proximity than in an open sea, where they might be carried by the movement of the floe out of the direction of the ship? To this Petermann answers that from the total absence of drift-wood north of Smith Sound, he concludes that those inlets can have no connexion with the Polar Sea on the Asiatic side and off the continental coast of North America, and that a neck of land not far to the north of Cape Parry, as seen by Morton in 82 deg. north latitude, turns those waters into a bay. The supposition of land stretching from Cape Parry as far as the North Pole is, he says, a mere speculation, founded on nothing but the wish that such should be the case. It would be a matter of regret if the success of an expedition should be staked on such a speculation.

But it may be said in reply to this that the prolongation northwards of the land seen at Cape Parry is no more a speculation than Petermann's conclusion, that a neck of land, which no one has seen, not far to the north of the said cape, turns the waters at the head of Smith Sound into a bay. And even granting that such were the case, the said neck of land must have a north coast-line as well as a south or south-westerly one, and, however narrow the presumed neck of land might be, that coast-line would constitute a nearer starting-point for the North Pole than any other known land, and would constitute the safest means of retreat in case of failure or disaster. Spitzbergen and the continental land of Siberia, prolonged by Capes Taimyr and Tcheliousskin, present the next nearest territorial places of refuge to the North Pole; but there can be little doubt that Captain Osborn is correct in surmising that the north end of Greenland, or islets beyond, stretch nearest of all other land to the Pole. This has been satisfactorily shown to be the case to an extent of many miles; how far farther is truly a matter of conjecture. There is no room for conjecture with regard to Spitzbergen and Siberia, and the config-

uration of the known portions of Greenland and Grinnell Lands make it more than a speculation that they extend still farther north, even according to Petermann's views of the subject, although how far to the north becomes, as before said, a mere matter of conjecture.

We are arguing this only in connection with the safety of the expedition; for we are not prepared to say that a sea of limited extent, like Smith Sound, encumbered with ice and icebergs, can present the same facilities for navigation as a more open sea under favorable circumstances. All that we venture to propound is that, keeping to the western or weather-shore in preference to the eastern or lee-shore, in accordance with a well-known Arctic canon, there would be greater safety for a ship in Smith Sound than in an open sea; and with land approaching nearer to the North Pole than at any other known point of the globe, so also there would be greater chances of reaching that Pole.

But this does not affect the question as to whether there are greater probabilities of reaching the North Pole by water than by land. Captain Osborn, we have seen, argues that the flocs which drift down upon Spitzbergen from the north contain no icebergs proper in their embrace, and that the presence of such (and they abound in Smith Sound) is essential to the breaking up and destruction of the ice-fields. Petermann, on the other hand, quotes Dr. Whitworth, surgeon of the *Truelove* of Hull, who reached, in 1837, the latitude of 82 deg. 30 min. north, in 12 deg. to 15 deg. east longitude, and who says: "I am satisfied that the probability of reaching the Pole by water is much greater than by land, for we had in 82½ deg. an open sea to the north-east quite free from ice; no apparent obstruction presented itself to our progress; we might have reached the Pole with the same ease and safety that we reached the latitude we were then in. A screw steamer properly constructed, well manned, and efficiently commanded, would prove the practicability of the attempt in a voyage of three months, and might, in addition to its main object, discover new fishing-grounds to the east of Spitzbergen for our whalers. The months should be April, May, and June. In July the navigation of the Arctic Ocean

becomes dangerous from the dense fogs which prevail."

There is a very important argument in favor of the Spitzbergen route, which is that, in addition to being the shortest and most direct, and that the practicability of the attempt would be shown in the space of a few months, such an expedition might be got up at an expense of less than 10,000*l.*; whereas the French estimate theirs at 20,000*l.*, and an expedition by Smith Sound would be little less costly. Sir E. Parry's expedition, as far as 82 deg. 45 min. north latitude, in the Spitzbergen Sea, the highest point yet reached by any well-authenticated expedition, only took six months from the river Thames and back, and only cost 9977*l.*

Petermann's views of the ice formations of the Polar seas are very plausible. They are to the effect, that the ice formed on the coasts and in the ocean every winter is, towards the end of that season, set in motion to lower latitudes, where it rapidly melts away. Vessels proceeding towards the Pole in the spring and summer—and hitherto only these seasons have been selected for Polar voyages—encounter those ice-streams generally in their furthest limits towards the equator, in latitudes where the ice is entirely absent in winter, and where little is found in the spring and autumn. This is the case in every Polar sea of any extent, and with a ready access and egress. All the ice, indeed, whether in the form of drifting icebergs or flocs, of field ice or barriers, forms a movable band of two degrees to six degrees of latitude in width, beyond which the sea is more or less free of ice, and not filled up with it, as is popularly supposed. According to this view of the subject there would be a winter Polynia and a summer Polynia. Vessels pushing through the summer belt or barrier of ice, as Captain Lambert proposes to do in the Siberian Sea, will find a navigable sea in the highest latitudes, and no doubt to the Pole itself, if an extensive sea reaches that point. So Petermann argues in like manner: vessels penetrating through the floating ice, at or near Spitzbergen, will find a clear and navigable sea before them as far as the North Pole.

A sledge expedition, starting from Smith Sound, Petermann argues, would

at the best be only able to follow the sinuosities of some small intricate channels like those to the south-west; whereas a vessel from the Spitzbergen Sea would have access to the whole Polar area as far as the sea extends. An expedition like that of Sir James C. Ross to the Antarctic Ocean, would open to our knowledge the whole central area from Spitzbergen to Behring's Strait, and from the Siberian coast to the Western, the American boundary of the Arctic basin!

An efficient screw-vessel might, in the proper season of the year, accomplish a voyage from the River Thames to the North Pole and back—or to any land beyond the North Pole trending in the direction of Behring's Strait, the Siberian or American coast lines—in two or three months, and at a cost perfectly insignificant as compared with that of any Arctic expedition hitherto despatched through Baffin's Bay.

The supposition that there exists in the sea between Spitzbergen and Nova Zembla (Novaia Zemlia) an ice barrier, preventing well-appointed vessels from proceeding in that direction northwards, Petermann holds to be a mere fiction and prejudice. There is, indeed, in no Polar sea of any extent, even right under the Pole itself, any such thing as an ice barrier, that may not be successfully overcome by an expedition such as would be sent out in the present day. A new expedition to the North Pole by way of Spitzbergen might leave port about the 1st of March, before the drifting masses of ice from the Siberian shores encumber the Spitzbergen seas; it would then have the chance of sailing under favorable circumstances, in one stretch to the North Pole, perhaps in three or four weeks, and arriving there at the beginning of the Polar dawn and summer.

Admiral Sir George Back remarks upon his theory that no man can pretend to say or foretell how far the best equipped steamer, commanded by the most able Arctic officer, could penetrate into the sea north of Spitzbergen through such occasional openings as the current or the winds might produce. The gallant admiral notices the failure of an attempt made by the *Trent* and *Dorothea* in 1818 to force their way to the north-

west of Spitzbergen, as also the experience of Dr. Scoresby; but as to the expanse of sea eastward of Spitzbergen, which has not yet been tried with steamers, that route might present greater advantages. Admiral Sir Edward Belcher also expressed his opinion that if Scoresby had pursued a course to the eastward of Spitzbergen, he would have drifted round the Pole! Sir Edward is not in favor of sledge travelling, but if vessels, he argues, were sent to Spitzbergen, they would be able to finish and report, if not successful, in one season; recruit and start afresh, as Ross did, in the second; and eventually, he had no doubt, they would be able to go to the Pole and back, and return to England within six weeks.

Admiral Collinson, on the other hand, does not believe in Polynias or open seas. It is the drifting of the ice, he says, that leads to the belief in the existence of an open space behind it. Ice occupies a larger space than the water from which it is made; and immediately it is set free from the shore, the wind drives it up, and forces it to the south, and therefore we have that remarkable phenomenon, a downward drift, without any open sea left behind it. Admiral Collinson adheres to the principle which Parry enunciated, that if you want progress in the Polar Sea, you must hold by the land. If Sir James Ross, he says, broke through the icy barrier, it was because there was land beyond it, and that land was the limit of the expanse of the ice.

Admiral Ommanney argues that Smith Sound is very difficult of access, and the sound itself a most dangerous point in Arctic navigation. There is, on the contrary, he says, an open sea round Spitzbergen, and it presents a safe basis from whence the opportunity could be watched for penetrating the ice at a more northerly point than could be reached in any other quarter. Scoresby found an open sea beyond Spitzbergen, and he (Admiral Ommanney) believed that the influence of the Gulf Stream probably extends past Spitzbergen into the Polar Sea. He had picked up a cask of claret off Cape North in the White Sea covered with barnacles and weeds. Admiral Fitzroy, who was also in favor of the Spitzbergen route, believed that the old

Dutch navigator sailed close to the North Pole, if not over it in an open sea. The lamented navigator cleverly illustrated the impinging force of the rotatory motion of the earth, which would drive the ice from the Pole to the south by the twirling of a mop.

Captain Maury is in favor of the route proposed by Captain Osborn, upon the sailor-like principle that an expedition by that route could "hold on by what it got." By the Spitzbergen route, he says, "we cannot hold on to what we get." The same distinguished hydrographer believes in an open Polar Sea; yet deductions, he argues, cannot be drawn from the success of Sir James Ross in the Antarctic Seas, for there the climate is eminently marine. In the Arctic seas it is continental. The winds which reach the Arctic Ocean arrive desiccated; they are dry winds; it is cold weather there. On the contrary, the winds which reach the Antarctic regions are moist winds. Captain Richards, the hydrographer, expresses his belief that one sledge out of ten might reach the Pole by way of Smith Sound; but no sane man, he added, would in the present day think of going up Baffin's Bay, through Barrow's Strait, or through Smith Sound with ships, in order to get into the Polar Sea. If Arctic discovery by ships is the object, there is only one route to go by, and that is between Spitzbergen and Nova Zembla. Captain Inglefield, on the other hand, believes in the practicability of the route by Smith Sound. He had been there, and had seen open water as far as the eye could reach.

It is manifest amidst this divergence of opinion among Arctic navigators, and those who have particularly devoted their attention to Arctic exploration, that the great preponderance of opinions is in favor of an attempt by Spitzbergen. A ship can certainly hold, as the eminent hydrographer Captain Maury has it, by its own, via Smith Sound, but there is the perplexity as to whether the journey beyond would have to be performed on sledges or in boats, and both would be dangerous—the majority of opinions being in favor of an open sea at the Pole. The route by Spitzbergen presents the advantages of being safer and less costly. The ice barrier in that direction has evidently been passed at pre-

vious times, and might therefore be passed again, especially with a point of repair at Spitzbergen, from whence to watch for an opportunity. The feeling that the explorers were safely housed in trustworthy ships when once they got beyond the barrier, would be one of infinite comfort, compared with the idea of M<sup>c</sup>Clintock and Young, launched with boats and sledges into the unknown regions beyond Smith Sound.

Petermann actually succeeded in obtaining a ship from the Prussian government, with which to carry out the Spitzbergen route, but unfortunately it came to grief before getting clear of the Elbe. It is said that a Mr. Rosenthal, a wealthy merchant of Bremen, is going to supply the means of exploration, and, like our Sir Felix Booth, defray the expenses of this most desirable investigation. The Swedish government are also at this very moment carrying out the measurement of an arc of the meridian, as advocated by General Sabine, and will take the opportunity of watching for an opening by which to slip to the North Pole; so whether the British government, wrapped up, unfortunately, like those of France and Prussia, in political and diplomatic jealousies, and struggles for power between peoples, parties, and factions, shall or shall not lend their support to any purely scientific object, there is every probability of something being done, and that at a very early date.

We cannot help feeling upon this subject, however (admitting as we do frankly with Captain Gustave Lambert, that science should know no country, that nationalities in such matters are praiseworthy, not objectionable rivalries, like the vast armaments upheld for no purpose but to keep the whole able-bodied men of a country from industrious and wealth-creating labors), with General Sabine, who, in a letter to Captain Osborn, says: "To reach the Pole is the greatest geographical achievement which can be attempted, and I own I should grieve if it should be first accomplished by any other than an Englishman; it will be the crowning enterprise of those Arctic researches in which our country has hitherto had the pre-eminence." Petermann himself also admits that when, some twenty-five years ago, the great French and American expedi-



tions, under Captain D'Urville and Lieutenant Wilkes, were out in the Antarctic Seas, together with Sir James Ross, it was clearly seen that only the English were quite at home in the Polar element; they fearlessly went on with their important explorations for three consecutive years, whereas the other squadrons were always beaten back in their attempts to penetrate towards the South Pole, after a comparatively short time. And surely, the Gotha geographer adds, where the wealth of the nation is so largely indebted to geographical discovery and knowledge, as is the case with England, some little return ought to be made to science. Captain Richards, the hydrographer, also admits that with a great area like the Polar regions at our very threshold, we ought to find out all about it. He looked, indeed, upon reaching the North Pole as mere child's play in comparison with what had been already achieved, and he did not know why the British nation should not have the honor of completing the discovery. "We are all desirous," said Admiral Collinson, "that this expedition should take place, and look upon it as one that will add to the honor of the country." And Admiral Ommanney expressed his hopes that this country would never allow another nation to anticipate us in this great discovery, after all we have done in expeditions to the Arctic regions. Lady Franklin, whose gallant husband lies buried in the ices of the north, still insists, like a true Englishwoman, that "for the credit and honor of England, the exploration of the North Pole should not be left to any other country. It is the birthright and just inheritance of those who have gone through fifteen years of toil and risk in Arctic seas. The glory that yet remains to be gathered should be theirs; and can there be any moment so fitting as the present? Those accomplished Arctic navigators who have done so much already, are still young in years and ardor, though old and wise as patriarchs, by dint of observation and experience. What future generation will see the like?" Sir R. I. Murchison also says that it specially pertains to our nation, which, by the conduct of its bold and skilful voyagers, has delineated on the Map of the World the outlines

of land and water over so large an area of the Arctic regions, to complete this grand survey, by an endeavor to hoist the union jack at the North Pole itself.

Captain Gustave Lambert, the projector of the French expedition, on the other hand, declares that, as a sailor, he would be wanting in a kind of duty of competence, if he did not express his fear of failure of an attempt made by way of Nova Zembla. "If I was to be given a vessel," he says, "with orders to follow that direction, I would go, but I would not go till September, and on leaving Spitzbergen to the right, and for no reason, I should also not dare to be responsible for anything!" The expression is not very clear, for if the gallant captain is alluding to Petermann's projected line between Nova Zembla and Spitzbergen, the latter would lie to the left, not to the right.

According to the same distinguished navigator, Captain Osborn's scheme is open to the objection that leaving a ship at the entrance of Smith Sound, or at the wintering places of Kane and Hayes, as a basis for rallying and a point of refuge in case of accident, he would make his way in another vessel to the extremity of the sound, into Kane's open sea, a sea which he imagines to be a simple break in the great glacier which is by him supposed to envelop the Polar cap; he would proceed across this in sledges, which would necessitate going and returning, forty-five days' travel at the least, at the rate of ten leagues per diem, with a heavy load of provisions and scientific instruments; and the explorers would have to make their way back to the first vessel before reaching the second.

Petermann, on the contrary, as we have seen, believes in an open Polar sea, and consequently in the breaking up of the ices at a favorable season; according to him, the Pole cannot be reached in sledges; such would be arrested by the same difficulties that Parry had to encounter in 1827; therefore the direction of the Gulf Stream, a vast current of warm water which sweeps round the north of Europe, should be followed, and which direction lies between Spitzbergen and Nova Zembla.

It is to be observed in connection with this supposed Polar prolongation of the Gulf Stream, that General Sabine, pres-

ident of the Royal Society, called the attention of that learned body in November, 1864, to certain recent discoveries which attest the continuation of the tropical Gulf Stream to the shores of Nova Zembla, and to a communication from Professor Forchhammer of Copenhagen, "a valuable contribution to a great subject—the History of the Sea"—in which by careful analysis it is shown that in the Atlantic Ocean the saline ingredients in the sea-water decrease with increasing depth. This is found to hold good even to extreme depths; and the existence of a Polar current in the depths of the Atlantic is hence inferred, since it is a well-established fact that the Equatorial seas are richer and the Polar seas poorer in saline ingredients.

Again, by analysis it has been proved that the current flowing down the east coast of Greenland has an Equatorial and not a Polar origin—a mere recurring of the Gulf Stream after rounding Spitzbergen; and General Sabine goes on to suggest, "May it not be possible that the iceless sea teeming with animal life, described by Kane as viewed from the northern limit of his research, is, as he himself surmised, but an extension of the same equatorial stream which produces corresponding abnormal effects at every point to which its course has been traced?" and the worthy president of the Royal Society adds, "When physical researches shall be resumed within the circle which surrounds the Pole, this, perhaps, will be one of the earliest problems to receive solution."

Captain Gustave Lambert combats this supposed northerly extension of the Gulf Stream. It is not, he says, known what becomes of it beyond the coast of Norway, and it certainly does not destroy the great ice barrier between Spitzbergen and Nova Zembla, to which the French navigator gives a width of two hundred leagues. Captain Jansen of the Dutch navy, however, attributes the comparative mildness of the Spitzbergen climate to the Gulf Stream, but which, he says, does not reach Nova Zembla. Captain Lambert again, having in mind that a current flows from the north, bearing the ice to the south, as shown in Parry's expedition, and that it must have an origin somewhere, deems that it must be derived from one of the

southerly currents which flow through Behring's Straits or the Spitzbergen Sea, turning back cold upon itself!

The French project relies, however, like the German one, upon the presumed existence of an open Polar sea, and that in a region which is untouched by the Gulf Stream, although it may have its Pacific equivalent. The existence of a vast extent of free Polar sea, it is argued, is affirmed by considerations relative to the currents and flows of the sea. The circumpolar ocean, it is argued, is probably entirely frozen over during the winter season; but the amount of heat poured over the Pole by the summer sun would also lead us to believe, according to the laws of insolation, that a general break up takes place in the months of June and July. After effectuating the passage of Behring's Straits not earlier than in July, the route to be taken must be to the west, past Cape Serdze, and North Cape of Cook, the extreme point attained by that great navigator. Arrived at this point, it is presumed that the expedition will find itself engaged amidst loose floating ice, through which the vessel must be carried even if the most continuous ice-fields had to be cut with saws or blown up with gunpowder. The expedition will then find itself in the Polynia, a free and open sea discovered by Hedenström in 1810, and since visited by Wrangel and Anjou from 1823 to 1825. V. A. Maltebrun, in a work recently published—"Les Trois Projets, Anglais, Allemand, Français, d'Exploration au Pôle Nord"—has, it appears from a notice in the *Revue Bibliographique Universelle*, adduced the further testimony of Baron von Schilling, of the Russian navy, in favor of the existence of this Siberian Polynia. Further testimony in favor of its existence may be derived from the paragraph which has had the run of the papers, coming from one of the Pacific Islands, and which related the voyage of an American whaler in the same open sea, when the coast of a very extensive and high land was followed to a considerable distance. This is possibly the northern prolongation of the land discovered north of Behring's Straits by Captain Kellett of the *Herald* and Captain Moore of the *Plover* in 1848. The point at which Captain Kellett landed

rose to an elevation of fourteen hundred feet above the sea, and the gallant captain says he felt certain that they had discovered an extensive land, and he deemed it more than probable that the peaks they saw were a continuation of the range of mountains seen by the natives off Cape Jakan, and mentioned by Baron Wrangel in his Polar voyages.

The French expedition having then, according to Captain Gustave Lambert, reached the Siberian Polynia at the very point where Wrangel's sledge was stopped by open water, "which separated the thin and flat fragments of ice," it will have nothing to do but to sail to the North Pole, with all the resources accumulated in the ship not only in regard to instruments of observation, but also to provisions, and even to comfort.

If we admit, says Captain Gustave Lambert, the existence of an open sea frozen over in the winter months, but broken up in summer, Captain Osborn's project would be only practicable in winter. Human energy might overcome the difficulties presented in carrying it out even amid the rigorous cold which exists at that time, but if human curiosity can be gratified by such an expedition in as far as the Pole is concerned, a very small harvest of scientific observations can be gathered.

The route advocated by Petermann has, again, according to the French navigator, opposed to it the enormous barrier of ice, of great thickness, and which, resting upon Spitzbergen and Nova Zembla, stretches to the Siberian Polynia. The want of success which has attended upon the numerous attempts made by that route, not less than "the mountains of ice" accumulated in those seas in the midst of flat floes of marine origin, must lead us to apprehend a new failure. According to the adage which Captain Lambert has formulated for himself, "*Fuir les terres*"—"Avoid the neighborhood of land"—ought to be the device of Polar navigators. So also English navigators, Admiral Ommanney among others, who participate in the general opinion of Petermann, would still rather hold by the route taken by Parry in 1827, but without abandoning the ship, and with the establishment of an important centre for revictualling on the north of Spitzbergen. But it might

be remarked upon these objections that, granting an open sea north of the eastern extremity of Siberia, we do not know how soon it may be limited to the westward by a barrier of ice resting upon Capes Tchelioussin and Liakov, or New Siberia, or how far it may be limited by ice resting upon Plover and Herald lands, the extent of which appears to be so much greater than was at first supposed, and which may render the approach to the Pole in that direction, except in sledges, more difficult than even from Greenland or Grinnell Land. Should an open sea present itself beyond these latter points, there would be no reason for an expedition as projected by Captain Osborn abandoning its ship. It would, in fact, be as near the Pole and as far advanced in the open sea, supposed to wash the Polar cap, as Captain Lambert would be long after he had forced his way by saw and gunpowder through the outer ice-belt, and with less chance of meeting further unknown obstacles. It is curious to find two experienced navigators like Captains Osborn and Lambert, from contemplating the difficulties to be encountered in a different point of view, the one heralding the prolongation of land to the north as a most desirable thing, the other proclaiming that to avoid the neighborhood of land should be the axiom of every Polar navigator.

Mr. Lamont, who has passed two summers in Spitzbergen, says, that the Norwegian walrus-hunters scouted the very idea of the existence of an open Polar sea. On the other hand, Captain Jansen believes, from a careful digest of the records of early Dutch navigators, that there is open water at the Pole in summer, but not in winter, and that the disruption of the ice, and its movements induced by currents and gales of wind, make sledge expeditions less practicable and more dangerous, in case there is no land from 82 deg. to the Pole. Mr. Markham—a strong supporter of Captain Osborn's scheme—believes that the so-called "Polynias," or "open seas" of the Russians, are nothing more than what are called "water-holes" by English Arctic explorers. The theory of an open Polar sea had its origin in the remarkable journey of Baron Wrangel from the coast of Asia. It received

confirmation in the exploration that was undertaken by Sir Edward Belcher to the northward of Parry Islands; and further, again, in the open water that was seen by Morton, in Kane's voyage, beyond the northernmost point that had yet been reached in Greenland. Admiral Collinson seems, like Captain Osborn and Mr. Markham, to doubt if these are not simply open holes, rather than extensive seas.

Captain Lambert remarks that only one attempt has been made to navigate the route which he advocates, and that was by Captain Cook. This great Englishman, he says, deemed it prudent, on account of the fogs and storms of September, to return and winter in the Sandwich Islands, from whence to renew his efforts the next year. Unfortunately he fell a victim to the treachery of the natives, and this sad disaster alone prevented him, according to Captain Lambert, reaching the North Pole, although his object was directed to reaching the Atlantic by the north of Siberia and Europe. The explorations of Wrangel and Anjou have, according to the same writer, determined some of the limits of the Polynia—a constantly or permanently open sea, according to some, and the presumed existence of which serves as the basis to his project. These explorations have not, however, unfortunately, he admits, determined its limits.

An objection, it appears, has also been made to the French project, on the ground of the long preliminary distance which has to be traversed between France and Behring's Straits; but Captain Lambert pronounces it to be a mere "promenade maritime," the only inconveniences of which lie in loss of time and increase of expense. In the special point of view of the proposed campaign, he indeed argues that this inconvenience would be more than compensated for by the opportunity it would present of becoming well acquainted with the crew, "and of disembarking at the Sandwich Islands all such as should not feel themselves equal to struggling against greater obstacles." Starting in February, 1869, Captain Lambert expects, proceeding by Cape Horn, to be in the Polynia in July, and at the North Pole in August of the same year.

It has been further asked, What is there to be done at the North Pole? What object of interest or utility is there to be gained by reaching that point of the globe? The reply to such a question is far more difficult and comprehensive than appears on the surface. It requires, indeed, some preliminary acquaintance with the physical sciences to be able to appreciate the nature, value, and importance of these objects.

The first point is to determine the position of the ideal axis round which the earth moves in a sidereal day, and which has never undergone any known mutation. That is to say, that supposing the poles to vary in their sidereal position, as advocated by some scientific men, in order to account for certain climatic and geological phenomena, still the position of the poles themselves with regard to the terrestrial globe cannot vary. The axis of rotation cannot but be as a rigid bar or straight line, extending from one pole to the other. Debarred of the use of the great and costly instruments of a fixed observatory, an expedition arriving at the North Pole would deem itself fortunate if—the point being on land—it could determine the position within three hundred yards or five hundred yards of its true situation. But Captain Lambert believes that if on land a bar of iron bearing the French flag could, after some corrections for possible errors, be planted in the line of the actual prolongation of the terrestrial axis. If the North Pole should be capped with solid ice, an almost equal precision might be arrived at; but if open water, and the expedition shall be able to place itself within one or two thousand yards of the point sought for, it may be deemed to have attained a great success.

The stars neither rising nor setting, but describing circles above the horizon which are parallel to the Boreal Celestial Pole, there would be no time but that of place—no term of longitude—and if the chronometers were left unwound, their absolute state could be easily recovered. A vertical line becomes at such a spot an equatorial gnomon or dial, upon which the movement of the solar or lunar shadows marks the progress of time. The planets would appear according to their declensions or distances from the equator, the sun



would remain six months above the horizon, six months below it, whilst the moon would be visible for fifteen days in the month, and invisible for the other fifteen. Such would be the spectacle presented to a person stationed at the Pole, where a common theodolite might be made to serve all the purposes of an equatorial.

Dr. Hayes, it is well known, swung a pendulum and noted its vibrations in Smith Sound, where he determined an amount of flattening equal to 1.372, different to the generally received opinion. Captain Lambert is having constructed a pendulum of invariable length, by a pupil of Bréguet's, which he hopes to swing at the North Pole, and if the celebrated experiment of M. Foucault is repeated at that point, the pendulum will be observed to traverse the entire circle of the horizon in the course of a single day. From what experience we have had of the fatigue attendant upon noting the vibrations of a pendulum in a temperate climate, our zeal for science scarcely goes so far as to envy an observer at the North Pole.

Meteorology, only recently placed on a scientific footing by the researches of Humboldt, Sabine, Maury, Fitzroy, and others, would have much to gain by an expedition to the North Pole. The more so as in the present day the general aspect of physical science is undergoing a transformation, from the tendency now general among observers to study the co-relation of forces, formerly looked upon as independent. Every new inquiry, indeed, tends more and more to establish the great fact that all these forces are only manifestations of one and the same cause—motion; this motion being produced under heterogeneous conditions, which engender the divergence of the apparent results.

The late Sir David Brewster, by examining the inflexions of the isothermal lines, found that two series united at certain points; and he was thus enabled to establish the existence of two poles of extreme cold, one situated north of the American continent, the other north of Siberia. Captain Lambert, who uses the term *insolation* to express the quantity of heat cast by the sun in different places, at different seasons, and different hours—the expression corresponding, in

fact, to our term radiation—thinks that he has discovered, not only the cause of the constant temperature under the equator, and the variable temperature at the Poles, but also a zone of minimum cold below the 80th degree of latitude. There is much still to be done in this direction.

The magnetic or electro-magnetic axis, poles, and equator, and all its attendant meridians and parallels, do not, it is well known, correspond to the terrestrial axis, poles, and equator. The dip is nil at the equator, and attains an angle of 90 deg. at the two magnetic poles. The direction of the parallels is only to be determined by following out the lines of equal dip—a labor in which much has been done, but in which much still remains to be accomplished. It is the same with regard to the intensity of the electro-magnetic force, as measured by the number of vibrations of a needle in a given time. If the magnetic pole was stationary, like the terrestrial pole, the meridian furnished by an imaginary line carried from one pole to the other might be made to constitute a natural meridian, which could be made to supersede the absurdity of maps being constructed as they are at present, with the longitudes marked in degrees instead of time, as they should be, from Greenwich and Paris. But the electro-magnetic pole, having to depend for its existence upon the co-relation of forces, is a variable point, and therefore unsuited for such a common meridian. The magnetic equator itself presents abrupt breaks or solutions of continuity, the intensities vary to a still more remarkable degree, and the variation, or the angle formed by the needle with the magnetic meridian, presents two extreme points—one in Siberia, the other in the Pacific—between the Sandwich Islands and Tahiti. This is no more than is to be expected of phenomena dependent on the motion of forces influenced by heat and nature of soil, and not of a fixed character, like the terrestrial axis. Recent researches tend more and more to establish a relationship, always believed in, although not at first corroborated by actual observation, between the aurora borealis, mostly seen in regions of extreme cold between the 70th and 80th parallels, and electro-magnetic forces. Captain Lam-

bert also hopes to do much towards determining the relations of terrestrial magnetism and terrestrial heat, or *insolation*, as he terms it. So enthusiastic, indeed, is the French projector of an expedition to the North Pole, that he avers that a complete observatory established at the Pole would give an impetus to physical science equal to what can only be expected in the course of a century under less advantageous circumstances.

General Sabine, the senior living officer of those who accompanied Ross and Parry in their early explorations of the Arctic zone, and who collected in Spitzbergen, Melville Island, and East Greenland those valuable data in terrestrial magnetism which have subsequently led to the construction of the beautiful charts which exhibit the declination, inclination, and intensity of the magnetic force over the globe's surface (a wonderful reduction of scientific data to good useful purposes, as Captain Osborn declares, which every sailor can appreciate and be thankful for), is little less sanguine of valuable results to be obtained to science by Polar expeditions. His interest attaches itself, however, more particularly to the Spitzbergen Seas, in which the Swedish government are carrying out that measurement of an arc of the meridian, the value and importance of which the learned general had urged forty years ago upon the attention of the British public, which he had planned the means of executing, and which he ardently desired to be permitted to carry out personally.

General Sabine's original interesting paper upon the measurement of this arc was addressed to Mr. Gilbert, M.P., vice-president of the Royal Society in 1826. In it he pointed out the facility offered by Spitzbergen for a measurement of an arc of the meridian extending over nearly four and a half degrees of latitude, stating that the value of this measurement, in the latitude of Spitzbergen, towards deducing the proportion of the polar and equatorial diameters by its combination with an arc near the equator, "was most important;" and he added that its value would be equivalent to an arc in Lapland of six times the extent of the arc measured by the French Academicians. Captain Osborn urges, in favor of his project, that every arrangement

might be made for a measurement of four degrees of the meridian upon the shores of Smith Sound. One of the ships being left about Cape Isabella and the other pushed on to Cape Parry, the intervening space would comprise rather more than four degrees; and during the summer season, whilst the Polar Expedition was absent, there could be no more profitable way of occupying those left in charge of the ships, than in doing such a work as measuring an arc; the ice of the strait, affording considerable facilities for such an undertaking; and especial provision in the expedition might be made for such persons as were well qualified to execute it.

Icebergs being a creation of land, subject to the same laws which have been so ably developed in modern times with regard to the glaciers of Switzerland and Norway, and abounding most in the Antarctic Ocean, Captain Lambert argues that there is land at the South Pole, water at the North Pole. But as there are mountains in the Himalaya which rise to an elevation exceeding that to which vapors rise, and which must consequently have bare rocky summits void of snow, so it might be questioned if there is not an amount of cold at the poles which might be unfavorable to the formation of glaciers, and consequently of icebergs, whose true country appears rather to be between the parallels of 75 deg. and 85 deg. north or south latitudes.

It has been supposed by some that the accumulation of ice at the poles, and sudden changes occurring in its accumulation, distribution, and breaking up, may affect the position of the axis of rotation, and consequently the climate of the terrestrial globe. Mr. Hamilton, for example, pointed out the well known fact that the flora and fauna of the buried worlds indicate a much warmer climate in the Arctic and Temperate zones, than anything we are acquainted with in the present day, and that therefore it would be a matter of great interest to see these northern regions geologically explored! This is about as childish as Mr. Lubbock's support granted to the same undertaking, upon the ground that recent researches having shown that man, in the earlier times of which we have any relics, appears to have been not only a savage.

but a savage living under Arctic conditions. Therefore, the native tribes who might be observed on the projected expedition were precisely those who would have the greatest interest for us at the present moment. Savages living under Arctic conditions could be studied, as Admiral Fitzroy once pointed out, but without a correct sense of what constitutes geologico-archæological progression, at Terra del Fuego, without the difficulties of a Polar expedition. Mr. Markham traces the Esquimaux races, or Skraelings (dwarfs) of the Northmen, to Asiatics expelled by Zenghiz Khan, and who in their turn drove out the Northmen. Mr. Lubbock believes that they are races driven north by the Red Indians, for they were found in Labrador a hundred and fifty years before the time of Zenghiz Khan. Mr. Crawford, the president of the Ethnological Society, does not believe in the settlement of Northmen on the coast of Greenland in the ninth century; and, he argues, the ancient Runic inscriptions and church bells found in the country came from sea-rovers, adventurers, and pirates, who only settled there occasionally! Interesting as such questions unquestionably are in an ethnological point of view, they have little to do with the main objects of a Polar expedition, and can only be considered as subjects of collateral inquiry. It is possible, indeed, to so swamp the great objects of an expedition with preliminary, collateral, and subsidiary inquiries, as to delay, embarrass, and even endanger the success of the main objects. This has occurred in more than one instance.

Captain Lambert spiritedly contests the geological theory of a change of climate induced by a supposed mutation in the position of the axis of the earth. He looks upon the additional weight of glaciers as totally inadequate to produce the phenomenon in question. Nor does he attach much more importance to the theory of deluges, ice-marks, and buried mammoths induced by lunar perturbations. It is certain, however, that there has been a change of climate—a change which, according to some, has been slow, steady, and progressive; but the laws of which can scarcely be expected to be materially developed by any expedition to the North Pole.

It is different in regard to natural history. Real and important results might be brought about by the projected Polar expeditions, and the exploration of the Polynias or open seas of Siberia and Greenland, by discovering new and extensive fields for whale fishery. Bow-heads and devil fish, as the Americans call them, are probably to be met with all around the Polar circle.\* The food of the Arctic whales, like that of the walrus, a partly herbivorous mammal, is supposed to consist mainly of small red crustaceans, which abound in these seas. This is a point worth examining; but be that as it may, it is a well-established fact that the Polar seas are peculiarly rich in the lower organisms of life. Professor Owen has also pointed out a more curious than important fact, that a rare and solitary form of the manatee, a warm-blooded animal allied to the whale tribe, but very different in form, and having something human in its physiognomy and in its habit of swimming—mermaid-like—with its young clasped to its breast, named by Russian naturalists the *rytina*, inhabited the icy sea of Siberia within the last century, and he deems it within the bounds of probability that this animal, or some allied form, might be found within the retired waters of the Pole. The small number of these river cows, as they have been called, that are known still to live on the earth are now met with only in tropical latitudes; but in Europe these strange creatures have been found only in a fossil state in middle tertiary strata. But in other respects, as the learned professor justly remarked, pure zoological science had little to expect in comparison with the general scientific results that we might hope to attain from the proposed explorations.

There can be no question, taken in any point of view, that it is desirable that the projected expeditions to the North Pole should be carried out. Two English, at least—one by Smith Sound, the other by Spitzbergen; one German, by Spitzbergen; and one French, by Behring's Straits. Captain Gustave Lambert, appealing to his countrymen,

\* The American whale fisheries in Behring's Straits amounted in two years to the enormous value of \$8,000,000.

dwells upon the sad contrast presented by the millions wasted in those great national duels—which have not, he says, even the excuse of ordinary duels—with the miserably small sums devoted to the pursuit of science. It is, indeed, this mistaken opposition placed by the spirit of war to the spirit of peace which alone leads him to apprehend that he may not be allowed “to assist at the grandiose spectacle of such a scientific steeplechase.”

England, adds the Frenchman, eloquent and enthusiastic in a noble cause, would (at such a steeplechase) enrich the golden book of its maritime glories by one more name. The stars of the American Union, the country of Maury, would once more be lit up by those long days respected by the night. Dr. Hayes is, he feels certain, ready to begin again. Holland, once the queen of the seas; the three Scandinavian kingdoms; Russia, whose icy shores are bathed by the Polynia, would give worthy successors to the Barenzes, the Behrings, the Krusensterns, the Wrangels, and Anjous. Learned Germany would take its rank under the impulse of Augustus Petermann. Already, thanks to Rosenthal of Bremen, that fiction has assumed a body, become a reality. The country of Barthélemy Diaz, of Vasco de Gama, and of Magellan would take its place in the race, and there would be no reason to dread that the giant Adamastor should bar the passage seated on a rock. Young Italy would remember that illustrious Genoese, who, under the Spanish flag, inscribed the immortal date of October 14, 1492, in the records of humanity. “And for us, gentlemen,” he says, in conclusion, “if I do not enumerate the brilliant stars of our naval crown, it is because I wish to leave to the German Petermann the honor of having brought to light the riches of the French maritime scroll.”

“Ah! if such a tournament was to be really inaugurated, although science knows no country, what Frenchman would not formulate ardent vows and join in the most energetic efforts to ensure that the French expedition to the North Pole should arrive first, distancing its competitors in the race, were it only by a ship's length?”

Dublin University.

#### BRITISH ARMS AND SOLDIERY, ANCIENT AND MODERN.

THE modes and equipments of warfare, that dreadful, but in some sense necessary evil, have varied as much from the days of Nimrod to those of the first Napoleon as the fashions of female attire. Even from that day in August, 55, B.C., when the Ancient Britons and Roman Legionaries mutually astonished each other, to the three hot days at Waterloo, what variations have taken place! We fancy two large paintings representing the conflicts at which Julius Cæsar and Napoleon I. were present, placed on opposite sides of a large hall, and by some magic sleight the mimic warriors, endowed with life at the same moment, and grimly and curiously inspecting the dress, the arms, the armor or no armor of the opposite warriors, and the disposition of the battle. How impatiently would the great modern chief look on the single combats, and the slow process by which a hundred or two would be slain or disabled on each side! With what contempt would the fiery Celtic spear-thrower gaze on the apparently inactive lines of men, doing nought but blowing smoke out of a line of level tubes!

Sir Sibbald Scott, in the work quoted below,\* complains that though we have accounts of isolated campaigns and wars, in which the arms of Great Britain have been employed, there exists no complete history of the military force of the country since the invasion by Cæsar, its varying organization and modes of warfare at the different periods, its arms, accoutrements, &c. These are his own words:—

“The early composition of armies—how those great battles were fought and won, the very name of which, after centuries, still excites our pride, and which gave promise of future triumphs—how the crowd of fighting men was collected, and ranged under the banners of separate chieftains—the groundwork of our standing army—in these paths, somewhat intricate, frequently obscure,

\* “The British Army, its origin, progress and equipment.” By Sir Sibbald David Scott, Bart., F.R.S., London, Member of the Royal Archaeological Institute. London and New York: Cassell, Petter, and Galpin.



the English writers on military subjects have trodden but slightly."

To supply this deficiency is the object of Sir Sibbald's large and expensive work. He acknowledges the services of Captain Grose, in preparing the ground for a comprehensive military history of Britain, gives due praise to Sir Samuel Meyrick's treatise on arms and armor, and Mr. Hewett's late works, and does not forget the researches of his Imperial Majesty of France into the history of artillery.

England's victories have, it seems, been won despite the inertia, and neglect, and want of wisdom generally exhibited by its government; our war in the Crimea forming no exception.

"Nations have their peculiarities like individuals. Ours appears in a want of organization from first to last. English armies have generally been inadequate in force, outnumbered by their foes, and generally deficient in supplies—a strange anomaly for a people so thoughtful and business like. Yet have we great cause for gratitude and for pride as a nation, when we look back at what we have achieved for our own liberty, and for that of Europe, by a generous and manly use of the weapon of the sword."

#### CELTS AND ROMANS IN CONFLICT.

Our author is at no small trouble to ascertain the dates of Cæsar's two landings, and the points where the descents were made. He inclines to give Boulogne the honor of having seen the fleet set sail, and to Romney Marsh the glory of witnessing the first battles of the fiery Celts and their cool invaders. Our British ancestors were not much behind the armies that fought on the strand before Troy about five hundred years earlier. They had bucklers, spears, swords, bows and arrows. They flung their spears overhand, as Hector and Agamemnon did in their day, and their war chariots did more severe execution than Diomed's. Their distant relatives, the Gael of Ireland, fought in the same manner, and with the same arms, and were as partial to the use of the chariots, but were, perhaps, better provided with head coverings (the *Cathbarr*) and loricas of strong leather. The Homeric student who takes up a Gaelic warlike poem, will find a striking likeness in the

modes of combat as described in it and the *Iliad*. The fight commenced with casts of lances, and the swords were only drawn when the spears or javelins failed to decide the combat. The Celts, either Gael or Cymri, do not appear to have practised fighting on horseback to any extent, and it was only in the accounts of the Trojan war, manufactured by romancers of the middle ages, that cavaliers in plate and mail charged each other with lances as at the Tourney of Ashby de la Zouch.

Historical archaeologists will examine with much interest the claim of different points of the Thames to the passage of the Roman army, and of Verulam, near St. Albans, to have been the capital of Cassibellaunus. Couay was probably the ford defended by stakes, which Cæsar forced. The ostensible cause of his second visit to Britain was the replacing of Mandubratius on his throne (he was king of the Trinobantes, or people of Essex). With this object he attacked the woody stronghold of Cassibellaun, and took it, but found immediately after, that the British chief was fast advancing on his camp on the Kentish shore. The attack was unsuccessful, but Cæsar had no time to work further woe to British chiefs or their tribes. A conference was held, a promise made to pay tribute to Rome,\* and not to disturb the King of Essex, and Julius made a quick return to Gaul, where his presence was needed.

"Such were the petty results of this mighty expedition. Never was so considerable a force, under so consummate a general, employed for two successive campaigns to so little purpose. The Britons, no doubt, were far behind the Romans in discipline, and Cassibellaun may not have been a match for Cæsar in strategy, yet a more effectual resist-

\* The proper names preserved by Cæsar are evidently Celtic ones Latinized. We could readily give explanations of them all, but the difficulty lies in the selection. *Trinobantes* may be made up from *Treun* strong, and *Abhan* river, the Thames being the southern boundary of the territory; or from *Treun* brave, powerful, *Ban* bright, referring to the character of the people. *Cassivellaun* when analyzed, affords words meaning eye, hair, castle, tribute-stone, orchard, fort, pass, and river. *Mandubratius* furnishes *Maon* hero, *dubh* dark, *brath* a triumphal crown, or *brathach* a banner.

ance was made by the indomitable spirit of our ancestors than those renowned conquerors had ever experienced in any part of the globe. The vast armament—eight hundred vessels—intended for the reduction of Britain to another province of Rome, had failed entirely in its purpose. Cæsar is content with restoring Mandubratius without leaving a single garrison or guard to protect his interests; and how long the parting prohibition to Cassibellaun was likely to remain in force, is not difficult to divine. The better-informed of his countrymen were severe in their criticisms on Cæsar. Lucan accused him of turning his back on the Britons; Tacitus writes that he did not conquer Britain, but only showed it to the Romans.

Strabo, who lived in the early part of the first century, is more careful to describe the appearance of the Britons than Cæsar. He says that some of their young men whom he saw at Rome, were taller by half a foot than the tallest man there. "They were loosely made, and had awkward feet; their hair was not so yellow as that of the Gauls. Their chariots were called *covini*, which our author rightly supposes to be a British or Gaelic term. It is from *cobh* (pr. *cov*), victory or triumph, or *comh* (same pronunciation), meaning protection, guard, defence.

The next trial of arms the brave natives had was with Aulus Plautius, Claudius's general, who made the descent A.D. 43, with four legions, German auxiliaries, and some elephants (?). He established a military colony at Colchester, anciently *Camelodunum* (*camh* strong *ail* stone or rock, *dun* fortress). Both Vespasian and Titus distinguished themselves in this campaign, reducing the Isle of Wight and taking twenty strong places. After the storming of Caer Caradoch (Cathair Caer, fort, *carraice* rock, *dochair* difficulty), and at the junction of the Clun and Teme in Shropshire, and the betrayal of Caractacus, little more was done till Suetonius Paulinus, intrusted with command by Nero, assailed Anglesea, the stronghold of Druidism, A.D. 59. It is hard for a native Briton, or even a Gaelic relative, to read the invasion of the sacred island, or the cruelties practised on the brave queen of the Iceni, without feeling stern

resentment against the harsh and cruel civilizers of the western world at that era.

"The strait was crossed in shallow vessels, while the cavalry either waded or swam. The Britons endeavored to obstruct their landing on the sacred island both by force of arms and the terrors of their religion. The women and priests intermingled with the warriors on the shore, and running about with dishevelled hair, appalled the legionaries who stood aghast exposed to the missiles of the enemy. But Suetonius, exhorting them to disregard a band of fanatics and females, they rushed to the onset, drove the Britons off the field, burned the Druids in the fires which those priests had prepared for their captured enemies, and destroyed the consecrated groves and altars."

Every school-boy has bewailed the hapless lot of Bonduca, or Boadicea, and her daughters, and felt little pity for the victims of the general massacre which she and her maddened followers made on the Romans and their adherents found at Colchester, London, and Verulam. When Suetonius at last ventured to engage her undisciplined multitudes, A.D. 62, his disciplined men of iron pierced their mass like a wedge; but though the victory remained with him, many a Roman soldier encumbered the ground on the evening of that terrible day. The unfortunate queen would not survive her defeat.

"Boadicea is described by Dio as of the largest size, most terrible in aspect, and harsh of voice, having a profusion of yellow hair, which descended to her hips, and wearing a large golden collar or torque, and a *χιτών* or party-colored tunic, drawn close about her bosom, and over this a thick mantle fastened by a clasp."

This is the earliest description on record of the dress of a British lady. It resembled in all particulars that worn by the women of Erin, who were contemporaries with Boadicea.

There seems to have prevailed among the Romans up to this time no idea of treating the Britons but with the utmost severity. Milder measures were adopted after the recall of Suetonius; and Agricola (A.D. 78-85), by a mingled system of severity and good treatment, and ini-

tiation of the natives into the usages of Roman civilization, tamed their hitherto indomitable spirit.

We find the Romans obliged to leave Britain, A.D. 420, and the poor civilized and degenerate Loëgrians or Britons of the plains obliged to claim assistance from the west German rovers to repel the incursions of the Scots and Picts, their troublesome neighbors. The earlier Britons had forced the Gael, the more ancient possessors of the island, into Wales and other portions of the western coast of Britain, and finally compelled them to cross the sea into Erin; and now the descendants of these Gael or Scots, as they were indifferently called, were only too ready to descend from the western Highlands into which their immediate ancestors had crossed from Ireland, and revenge the old wrongs. None can dislike each other more than near relatives, between whom some grievance exists; and the Gael and Saxon never regarded each other with more intensely bad feelings than the ancient Cymri and Gael, though offshoots of the same Celtic stock.

Sir Sibbald Scott passes over the space between A.D. 420 and 730, with only a pen-scraps or two. He finds the poor enervated Briton roused once more into energy by the unfriendly treatment of the Saxon intruders, and for a century and a half keeping them at bay. But it must be recollected that the native forces who presented effective resistance were those, and the children of those, who had sought refuge in the S. W. of the country, the mountains of Cambria and the hills and vales of the northern border. In all the bardic remains of these early times, there are continual complaints of the supineness and want of national spirit of the Loëgrians or Romanized Britons of the plains and cities.

#### WAR ECONOMY OF CELTS AND SAXONS.

Among the Celtic tribes the economy of a campaign was not very complicated. The chief made known to his people, by some simple expedient, the object of the armament, the probable duration of the campaign, and where the force was to assemble. Every fighting man of the *sliocht* bringing some provisions with him, was at the tryst at the time appointed, and the campaign was made, those of

gentle blood, the *duine uasals*, having command of the separate divisions. A system of simple military tactics was observed, but except those slain by slings, or arrows, or javelin-casts, before the forces closed, the fortunes of the day was generally decided by combats fought hand to hand. There was no such thing as regular pay. If victorious, the booty was equally divided. If defeat and many deaths ensued, the sufferers bore their lot without a murmur against their chief. He was the mere head of a large family, and the cause of every single individual was the cause of the entire tribe.

The acquisition of a great part of the isle by the Jutes, and Frisians, and Angles, was not effected in such a brigand, red-handed fashion as many think. A Saxon community, finding its numbers too large for its means of support, sent away a larger or smaller body. These presenting themselves to this or that king, or chief, offered him their services as swordsmen in return for a piece of land to settle down on. The land was given, and was divided by their own chief among the heads of families, these heads being accounted ealdormen, and the chief dignified with the name of *earl* (owner of land) or *ethel* (noble). In some cases the swarm of warriors having crossed the seas, and landed at some river's mouth, proceeded up its banks, till they came on a suitable spot. There they squatted, apportioned the land among the heads of families, and drew not a drop of British blood unless disturbed in their self-awarded grant.

We are far from hinting that all the level country of England was acquired in this inoffensive style by the Easterlings, but the deeds of the most unprincipled Saxon body that ever wrested British soil from its lawful possessors, were almost laudable compared with the ordinary deeds of the Norsemen, whose first baleful visit in 787, is thus naively recorded in the Saxon chronicle:—

"This year, King Beorhtic took to wife Eadburga, King Offa's daughter; and in his days first came three ships of Northmen out of Haratha Land. And then the Reeve rode to the place, and would have driven them to the king's town, because he knew not who they were, and there they slew him. These

were the first ships of the Danish men which sought the land of the English race."

Every Celt who arrived at the age of manhood was a warrior and hunter, through mere custom and the exigencies of the society in which he lived. He set little account by nationality. When the fiery cross or any other well-understood signal was sent round, he hastened to the standard of his chief, indifferent whether this chief was about waging war on his own account, in support of his superior chief or king, or in an attempt to pull him from his uneasy chair. The Saxon seems to have had wider views, and to have better sympathized with a system embracing the weal of a whole nation.

Every one arrived at man's estate was to be considered a soldier, and liable to serve in cases of invasion, civil commotion, and any national emergency. A threefold obligation lay on every free Saxon: to make and keep in repair roads and bridges, to build castles and fortifications for general defence, and to serve in war when called on. The clergy, though exempt from personal service, contributed by their property to discharge the *trinoda necessitas* above mentioned.

#### ANCIENT ARMS.

A Saxon freeman never transacted any business, public or private, unarmed, and in the grave his arms were laid beside his remains. The spear head is found beside the skull, sometimes at the feet, and the iron boss of the shield on the breast.

In an ancient Kentish barrow there was discovered the blade of a spear which had been laid at the right side of the warrior, and on the same side was the blade of a long knife or *sax*, from which weapon the people seem to have inherited their name. A sword 35½ inches long, including hilt, lay on the left side, but generally the remains of swords are scarce in the Saxon barrows. Shields, yellow-rimmed, made from the linden tree, and covered with bull-hide, were common. If an unprincipled shield-maker, with little regard to the safety of his customers, used sheep-skin instead of good bull-hide in covering the wooden frame of the shield, he was

finned thirty shillings—a round sum at that day.

The main strength of a Saxon battle array lay in its infantry; the cavalry consisted of the chief's or king's thanes\* or such men of property as could afford to keep a horse. In old paintings and drawings the only defensive armor afforded to them is the helmet. The spear was their weapon of attack. Body-harness of leather or mail, at first a privilege of chiefs only, came by degrees to be used by lower ranks—in fine, by any one who could purchase one, or who had obtained it from a defeated enemy. Harold's troops were provided with iron mail. In his wars with the Welsh he changed it for leather scales overlapping each other. This defence was of less impediment to the men in their mountain marches and counter-marches.

At page 112 of vol. 1, is presented a helmet of the days of Alfred. It is conical in form, and consists of three hoops fastened together by broad-headed studs, and surmounted by a conical cup. A peak in front ends in the fashion of a boot-jack.

The disposition of a Saxon army moving to, or waiting for, an attack was simple, and somewhat resembled the Grecian phalanx for compactness. The front rank wielded battle axes, and being defended in front by their joined shields they formed an impenetrable mass. Harold's, wound and the inconsiderate pursuit when the Normans feigned flight, lost the decisive battle of Hastings to the heroic but hard-drinking Saxons.

#### THE FEUDAL SYSTEM.

The feudal system introduced into England by the Normans, naturally arose from the restless spirit of the northern nations, their acquisition of territory by conquest, and the distribution of this territory by the conqueror among his chiefs. *Feo* in old German is fee or reward, *od* territory or possession. Thence the allotment made to a favored sub-chief by the commander of a con-

\* Originally young men of good birth, who formed part of the household of palace or castle, and filled posts of trust in time of war. Later they got grants of land, and ranked among the nobility.



quering army was the *feoda* or reward in land for his past and future services.

The owner of a large tract of land might select lesser feudatories, who rendered him the same services which he rendered to the king. William, as soon as the thing could be done, distributed the lands of the Saxon nobility slain at Hastings among his knights, and according as each insurrection failed there were new distributions. He did not meddle with the estates of those Saxon proprietors who had not appeared in arms against him. Sir Henry Spelman has discovered in the Domesday Book the names of nearly 8,000 Saxon holders of manors, who had not been dispossessed.

The establishments of knights' fees was a great engine in the establishment of William's influence. The possession of four hides of land (400 acres) imposed on its occupier the duties and privileges of a knight. He was liable to be called on in every emergency to render knight's service, and if incapacitated by age or any other cause, he should procure an efficient substitute, or produce the value of the fee in money, varying from fifteen to thirty pounds. Under the kings who came after the Conqueror, a holder of land was as eager to escape the honor of knighthood as a man of property would now be to acquire it. A barony in those days was equivalent to twelve knights' fees.\*

There was a dismal sight to be seen in the north in the days of William. In punishment of a revolt in which the northern Saxons were aided, but afterwards deserted by the Danes (these last

being bribed by the Conqueror), "he burned down houses and crops, and put every living thing to the sword. Not a village was left between York and Durham, nor for years was any attempt made at cultivation." Sixteen years afterwards the counties of Durham, Northumberland, Cumberland, Westmorland, and Lancashire were marked in a valuation as *waste land*.

Ecclesiastics, whether required by the State or not, attended battles for the purpose of discharging ghostly functions towards the dying. Notwithstanding the strict Church injunction laid on every Churchman not to shed blood, military instinct would in individual cases prove too strong. However the most warlike inclined priest or monk would not use pointed or edged weapons. He wielded the mace, and occasionally forgot the difference between defence and offence. The good monk Joceline of Brakelonde relates, under the year 1193, how—"Our abbot, who was styled the Magnanimous Abbot, went to the siege of Windsor, where he appeared in armor with other abbots of England, having his own banner, and retaining many knights at heavy charges, being more remarkable there for his counsel than for his piety. But we cloister folks thought this act rather dangerous, fearing the consequences, that some future abbot might be compelled to attend in person on any warlike expedition."

We must quote a passage from Froissart in which due praise is given to a brave clerical defender of the town of Hainecourt in 1339:

"He was a very bold and valiant man in arms, and was seen in the front rank dealing and receiving blows. A great stand was made at the barriers in front of the town, and many fierce personal encounters occurred there. In one of these, my lord the abbot seized the spear of Messire Henri de Flandre, and drew it through the clefts of the palisade. Messire Henri would not let it go, and so the abbot managed to get hold of the knight's arm, and draw it through as far as the shoulder, and would have infallibly drawn him in altogether, if the opening had been wide enough. I assure you that the said Messire Henri was not at his ease while the abbot thus held

\* Though the word knight (*knecht*) came to have a meaning equivalent to *eques* or *cavalier* it strictly meant *valet*. The son of a nobleman being sent to live in a family of the same rank as his own, waited on the nobleman or his lady even as a hired valet would. He had opportunities to distinguish himself when wars or disturbances arose, and when promotion occurred, he still retained his household name, *Thane*, an equivalent for *knecht*, is from the Danish *thegen* to serve; the *thow* was the slave, the *thane* the voluntary attendant who assisted in household affairs, as the slaves or thralls were employed for the most part on the lands, or in fishing (chiefly for eels), or hunting. In one household whose proprietor had lost his wife, his noble servants insisted on him marrying again, as they had no one to superintend the making or mending of their clothes, and were literally in rags.

him, for the abbot was strong and fierce, and pulled at him without sparing him. On the other hand, the knights pulled against him to rescue Messire Henri, and this wrestling and pulling continued a very long time, so that Messire Henri was much hurt. At last he was rescued, but his spear remained in the hands of the abbot, who kept it many years."

It is not needful to expatiate on the institution of chivalry, as its chief features are familiar to every one who is not a man of one book. We have already referred to the young postulant's training in the family of some knight or nobleman. Even the family of St. Thomas of Canterbury proved a good school of valor and politeness.

#### ARMOR FROM A MODERN POINT OF VIEW.

What ideas of grace, valor, glory, and every thing desirable, are attached by youth to the wearing of armor, but how the man experienced in modern warfare would dread the tedious and terrible operation of adjusting all the cold and heavy pieces, beginning at the feet and ending with the head; and how irksome and impeded must be the motions of a man in full panoply where there was such need of free and unencumbered action. Let the Lord Mayor's "Men in Armor" be questioned on their sensations when being put in harness, swung out of a window in on the saddles, and mortally afraid of a tumble on the pavement during the procession. If one of them came down with a clang he would not find it a matter of ease even to scramble to his knees.

The agility and strength required by Fionn MacCumhail of candidates for entrance into the bands of the Fianna Eirionn were not to be compared for a moment with what has been recorded of some of the mediæval knights. Your model chevalier in training, when in full panoply, vaulted into the saddle without using the stirrup, and to strengthen his arms made somersaults "in all his pieces." "He would jump up astride upon the shoulders of a tall man, mounted upon a tall horse, with no other assistance than laying hold of the man's sleeve with one hand.\* He would climb up a ladder on

the reverse side (armed) using one hand, and so forth."

#### SOME CHIVALRIC DETAILS.

The squire (*escuyer*, shield bearer) having attained the age of 21, became a *bas-chevalier* (*bachelor* is a corruption of this word) if he had property to support his new dignity. The banneret enjoyed greater property and greater dignity. The knight's standard ended in a tail or point, the banneret's flag was rectangular, the length being twice its width. When a knight attained the latter dignity, the end of his pennon was cut off, and thus it became a banner.

Students anxious to be acquainted with the whole series of ceremonies attendant on the creation of a knight, may consult Milman's or James's "History of Chivalry," or the first part of "Don Quixote;" we shall only seize one or two of the accessories. The word *dub* seems derived from the old French word *adoubé*, which meant adopted, *i.e.*, into the equestrian order. The word *accolade* (*ad collum*, to the neck) is generally applied to the blows of the flat blade given on the shoulders; might it not have been in the beginning, as our author suggests, an embrace? A quotation from Froissart illustrates this view: "When the brave Countess of Montfort received succors in her state of siege, (*Elle les fêta liement et baisa et accolade chacun de grand coeur.*" (She entertained them joyously, and kissed and embraced them with all her heart.)

These virtuous and noble dames of old days were no more encumbered with false modesty than the brave and estimable lady of one of our admirals who, not having seen her husband for a long time, was so beside herself with joy on climbing to the deck that she sprang forward and caught an old rough salt in her arms, and gave him *le baiser et l'accolade*. Was the admiral jealous, think you?

Unless a king had received the honor of knighthood himself he was incapable of conferring it. Francis I. was knighted by the Chevalier Bayard, as every school-boy knows; "and in England, Edward

\* The mechanical philosophy of this exploit is too much for us. Springing from the ground

while encumbered with armor, and attaining the position specified, is, beyond question, an impossible feat. Jumping from the horse's crupper might be feasible, but exceedingly dangerous.

III., Henry VI., Edward IV., and Edward VI. were knighted after their accession to the throne by their own subjects."

What a mingled tissue of good and evil was society during the days of chivalry! How regardful were the royal and noble and gentle knights of the claims which valor in an enemy had on their courtesy? What little resentment did they retain for blows received in fight, and how little did they regard the lives or sufferings of the mere people! The Black Prince, who allowed more than 3,000 men, women, and children of Limoges to be slain on one day, was most heedful of the case of three French knights whom he saw fighting against odds, and commanded them to be spared. Edward III., after the Siege of Calais, invited all his prisoners of distinction to supper, and thus treated Eustache de Ribemont, who, when he (the king) had been fighting as a volunteer under Walter de Mauny, had struck him twice to the ground.

"Eustache did not know who his adversary was, . . . and there was generosity and magnanimity in the monarch's address. 'Sir Eustache, you excel all other knights I ever saw in fighting. I never had so much trouble with any one as with you. You deserve the prize, and all the knights of my court award it to you.' So saying, the king removed the rich chaplet from his own brow, and placed it on Sir Eustache's. 'I present this to you as the best combatant in the field on either side, and I beg of you to wear it for a year for my sake. And as I know you to be gay, and gallant, and often in the society of the fair, tell them that I have bestowed this on you. You are my prisoner, but I free you from arrest. Go to-morrow, if it please you.'"

There are two accounts extant of Edward's treatment of the women, children, and helpless men, driven out of the town when provisions ran short. By one we learn that five hundred poor creatures perished between the walls and the camp, as he would not let them pass. We do not wish to believe that piece of savage inhumanity. By the other we learn that 1,700 were driven out and treated to a good dinner, and each presented with two esterlins (shillings) when leaving the camp.

It is surprising that the legend of the Black Prince slaying the King of Bohemia, and assuming his ostrich plume and motto, ever obtained wide circulation. The brave monarch was blind, and Edward would assuredly have preferred to put him to ransom than attack him at disadvantage. Besides, the noble old warrior was found covered by a heap of slain, in which state the chivalrous Black Prince would not have left his body had he been present at his death. Moreover, the plume of the King of Bohemia did not consist of ostrich feathers, but of two vulture's wings, such as may be seen in historical pictures on the helmets of German knights of the olden times.

The ostrich feather has been discovered on a seal belonging to Thomas, Duke of Gloucester, brother to the Black Prince. Prince Henry, son of James I., was the first who adopted the graceful plume as we now have it. Sir Harris Nicholas is of opinion that the feathers and mottoes were derived from the House of Hainault, to which the mother of the Black Prince belonged. *Houmout*, corrupted to *houmont*, found in the old mottoes, is made up of the German *hoch*, high or noble, and *muth*, courage.

#### WEAPONS OF OUR HENRYS AND EDWARDS.

Sir Sibbald Scott treats at considerable length of the arms of offence used by the paladins. Some of the very early and remarkable swords are still extant. *Joyeuse*, the famous blade of Charlemagne, with which armed warriors were cloven asunder, was long preserved at Aix-la-Chapelle, and is now among the crown treasures at Vienna. The ornaments of the handle and sheath are in the purest Arabian gold, and the blade is of the finest temper. It is said to have been sent to the Western Emperor by that hero of all boys and many men, the Caliph Haroun Al Raschid.

In the jewel house of the Tower, among the regalia, are preserved three swords, one of which, the sword of mercy, is very ancient. Matthew Paris, A.D. 1236, mentions it as having been borne by the Earl of Chester at the marriage ceremony of Henry III. He designates it as St. Edward's sword, "*qui curtein dicitur*." Among the famous swords of romance, that name

is borne by the blade of Holger the Dane.

"Joyeuse, Corto, Flamberge, Dardonnaia, Rompié, Durandal, et *Courtin le Danois*."

The cross of this blade is of steel gilt, the hilt is covered with fine gold wire, and the end flat. The two swords of justice, spiritual and temporal, are about the same length, thirty-two inches, and have sharp points.

No weapon requires more skill and address in its management than the sword. The cross of the hilt reminded the devout warrior of his duties. In absence of cross or crucifix he set the weapon upright, and repeated his prayers before it. He made oath on it in absence of prayer-book or Bible. It is then not to be wondered at that it should have enjoyed high esteem among the military trappings of the knights of old times.

The sword and dagger taken from James IV. at Flodden by Thomas Duke of Norfolk, were presented by a successor of his in 1681 to the College of Arms, where they have been since preserved. The blade of the sword is thirty-six and three-eighth inches in length, and that of the dagger, thirteen and a quarter inches.

When a knight was provided with a tolerably long sword, and no lance at command for the moment, he charged with the weapon in possession. A characteristic assault of this kind occurred on the day at Poitiers. A squire of Picardy, seeing the day go against the French, fled from the field on a horse provided by his page. Young Lord Berkeley, newly created a banneret, pursued him and after a league's chase was gaining ground. The squire seeing the position of things, wheeled about, and placing his sword in rest (the hilt under his arm), met his pursuer at full charge. He aimed a sweeping blow at the Frenchman, who dexterously avoided the stroke, and his own weapon-point coming into forcible contact with his opponent's sword arm, dashed the blade out of his grasp. Berkeley sprung from his steed to recover the weapon, but as he stooped, the Picard squire ran his sword through the cuisses on his thighs and disabled him. Taking up the Englishman's sword he asked him if he would yield. The feud not being a

*Poutrance*, submission was made, and the squire drew out his blade, bound up the wound and brought his captive with all the care in his power to Chatelheraut. He tended him there for fifteen days, and then brought him to his place in Picardy. There he staid till he was perfectly restored, and on going way left 6,000 nobles (£2,000) with his careful host, who became a knight through this liberal ransom.

The eye to such a result kept back many a death in those warlike days.

Damascus, Cologne, and Milan, were noted for furnishing blades of fine temper. Polybius (204 B.C.) and Diodorus Siculus (commencement of Christian era) mention the excellence of the Iberian (Spanish) weapons which were made for cutting and stabbing. Our author mentions that the blades in use among the Celts were pointless, but he must have overlooked the thousands of leaf-shaped weapons dug up in Ireland and the West Highlands, and preserved in our museums. In Saragossa and Toledo were the most celebrated forgers of sword-blades, the Toledo manufactories having been in operation so long ago as A.D. 852. Ford mentions the celebrated Andrea Ferrara as an Italian settled at the first mentioned of these cities. A careful writer in the *Cornhill Magazine*, concludes that this celebrated sword-maker was born about the year 1555, his family having already exercised the same trade for a couple of centuries, and that they derived their surname from the ducal city of Ferrara, which had given birth to the early artisans of the family.

It is not very clear why there should have been found in Scotland so many swords bearing the name of the Italian artist, there being but little trade ever between that country and Spain. Why there should not be many in the South and West of Ireland is equally mysterious, as the merchants in these parts kept up a continual traffic with the Iberian peninsula. W. Patten in his journal printed in 1548, says of the Scotch soldiers:

"They came to the field with swords all broad and thin, of exceeding good temper and universally so made to slice, that I never saw *none* (sic) so good. So I think it hard to devise them better."



The name of the national broadsword the claymore has its root in the Gaelic *claidheamh* (pr. *cloive*) sword, *mhor* large. The words glaive and cloive have evidently the same root.

Nearly all the Toledo blades bear this inscription,—*No me sacas sin razon ; no me invainas sin onor* (Draw me not without cause ; sheathe me not without honor), a wise lesson which the young bloods of all times did not place to heart as much as it deserved.

In the work before us are many representations of swords and daggers of the old day, still preserved in museums and the cabinets of the curious. The fashions of the guards are sufficiently varied, some being in the shape of a capital S, others consisting of spokes sloping downwards. The pommels in some form flat circles, and many guards and pommels exhibit masterly workmanship. There is not so much variety in the hafts of the daggers or *misericordes*, as they were sometimes called, either from their putting patients out of their suffering, or causing by their production from the sheaths the prostrate foeman to cry out for quarter. Oh, war, war! Oh ye great of the earth, who without urgent cause, send your thousands to pierce, and mangle, and disable the thousands living beyond this river or that mountain, what a rigid account may you expect to render before the great tribunal where you will be of no more consequence than the meanest recruit who at your behest met his death-wound on the battle field, and was only relieved by death from long and intense suffering.

The Church always set her face against those dangerous pastimes called tournaments. They would not be suppressed, but spiritual influence succeeded so far as to make them as little dangerous as possible taking everything into account ; the sword should have its edge turned so as to form a curve, and the spear to be blunt at end.

Among the knightly weapons the mace must not be omitted. This was a favorite arm with the patriotic Bertrand du Guesclin. Daniel, in his essays on French warfare, asserts that in the abbey of Roncevaux in the Pyrenees, two maces said to have once belonged to Rolland and Oliver, were long preserved. They consisted of heavy iron

balls attached by chains to stout staves, each two and a half feet long. Whether Charlemagne possessed two such Preux Chevaliers or not, Taillefer sung their exploits as he proudly stepped out before the Norman Host at Hastings, about three centuries after their supposed deaths at Roncevaux:—

“ Taillefer ki mult bien cantoit,  
Sur un cheval ki tost aloit,  
Devant eus s'en aloit cantant  
De Karlemaine et de Rollant,  
Et de Oliver et des vassals,  
Ki moururent en Renchevals.” \*

*Roman de Rou.*

The axe was a favorite weapon with the warriors of the North. It did not come to be popular with the French till the 12th century. It is not put in the hands of the Norman knights in the Bayeux tapestry. The Irish learned the use of it in their early conflicts with the Danes, their own arms being the leaf-pointed swords, two kinds of spears, javelins, and slings. However, they took to the battle axe kindly enough, and with such effect as to cut through the cuissards on the mid-thigh of an Anglo-Norman knight, and through the muscles and bone of the same thigh till the curved blade hit into the saddle underneath.

When *Allan Bane* describing the fight of Beal an Duine, says—

“ I heard the broad-swords' deadly clang,  
As if a hundred anvils rang,”

he gives the effect of the blows on the plate armor of the horsemen, not on the bucklers, for as a general rule the shields were made of wood and covered with leather. Such are the materials of the shield of the Black Prince which hangs over his monument at Canterbury. It is not necessary to perplex the reader with the varieties in the shapes of the shields at different periods from the triangular one of *Cœur de Lion* to that belonging to the father of Henry II. (Geoffrey Plantagenet), which reached from his shoulder to his ancle.

#### HEAD ARMOR.

In the article of safeguards for the head there was considerable improvement in

\* “ Taillefer (cut-iron) who sung right well, (mounted) on a fleet horse, went before them singing of Charlemagne, and of Roland, and of the vassals who perished at Roncevaux.”

the form, appendages, &c., from the time of the Conquest, when they consisted of conical iron caps with the useful but most unsightly nose-piece attached. Helmets worn by the Anglo-Saxon warriors had but a slight slope at the back. The ancient Irish helmets were nearly vertical behind. Consequently there was a considerable curved slope backward from the part which covered the forehead, and there were four strong ridges from the lower rim till they met at the apex. But of all the shapes invented by eccentric-minded armorers, the saucepan specimen, date about 1100, was best calculated to dispute the prize for ugliness with our soldiers' hats, before the days of Prince Albert.

Not content with the strong iron caps, the knights sometimes wore mail hoods inside them affording an additional defence to the head, and falling down around the neck. This was called the *camail*. "Helmets with beavers and visors (*bevere* to drink, *vedere* to see) attached, came in about the middle of the 14th century with plate armor. The movable *avent-ayles* (*avant* before, *ail* the eye) which might be lifted on to the front of the helmet, were much more convenient. Fancy the discomfort of striving to breathe with a wall of iron before mouth, and nose, and face, altogether.

Very little beauty of form is to be met with in the many varieties of head-pieces engraved for the work, if we except the *salade*, 1450, strikingly resembling the Grecian helm, a helmet found at Lochmaben Castle, and a variety of the *bassinet*. Let us now look out for the

#### BODY ARMOR : ITS MERITS AND DEFECTS.

The *acton* or *haqueton* or *gambezon* (*wamms*, *venter*), made of leather or cloth, or other soft padded material, was worn next the skin, to obviate the uncomfortable, hard, and cold feel of the mail shirt, which often formed one piece with the *camail*, or mail hood. The *acton* was also serviceable in saving the flesh from the effects of a severe blow struck on the mail without breaking it. A breast-plate (*plastron*) was often introduced between the *hauberck*, or *lorica*, and the *acton*.

"One of the interesting relics which time has spared to us of the Black

Prince, is his gamboised jupon, which remains suspended over his tomb in Canterbury Cathedral. It is of one-pile crimson velvet, with short sleeves, somewhat like the tabard of a herald, but laced up the back; the foundation of it is buckram stuffed with cotton, and quilted in longitudinal ribs."

When mail formed the body armor, jointed plates were in use for defence of knees and elbows. Towards the end of the 14th century, plate (*plat* flat) armor, which had been encroaching bit by bit, came into general use. Though a stronger defence than the linked mail, it was much more cumbersome, and to dismounted knights particularly so. To the fording of rivers and passing of marshes, it presented serious obstacles. The surcoat, worn over the armor, discharged a double duty: it kept off the rain, and prevented the hot rays of the sun from heating the iron shell.

Encumbered as the knight assuredly was, his strokes were by no means so effective, nor his bodily motions so free, as if clad in buff or light mail. But with spear in rest, and carried forward by a strong war-horse, the shock he communicated to his adversary was terrible.

"James I. is said to have shrewdly observed in praise of armor, that it not only protected the wearer, but also prevented him from injuring any other person. This, in some measure, accounts for the small number of knights slain in many engagements between cavalry only, in some of which not one knight was killed. Probably as ransom was a great object in those days, and a knight alive was of more value than a dead one, they rather wished to capture than kill their adversaries, and therefore endeavored to unhorse them, as a knight in heavy armor, when overthrown, was in great need of help, and might be likened to a turtle on its back, till he was turned over, and remounted by his friends, or seized by his enemies. The wounds received in action appear to have been chiefly contusions: blood was not always drawn."

Some circumstances of knightly frays were sufficiently revolting.

"Philippe de Comines relates, that at the battle of Fornuova fought under Charles VIII. in 1495, where a great number of Italian men-at-arms were over-

thrown, these could not be despatched until they were regularly broken up (like huge lobsters) by the valets and servants of the army, who were provided with hatchets for cutting wood, each unfortunate man-at-arms having three or four men employed at his destruction."

A European war-horse of our days bears, when going to battle, about seven or seven and a-half stone besides the weight of his rider, say ten or eleven stone. The destrier of Robert Dudley Earl of Leicester, when bearing his master at a tournament, endured a weight of about twenty-three stone.

It is well known that the average-sized armor of the days of chivalry is too small for modern men-at-arms. The continual exercise practised by the knights, and the heat produced by the armor and under clothing, were unfavorable to the acquisition of fat. So that the men of the armor-period were "more sinewy, with greater powers of endurance, and more spare of person."

In the good old times of rugging and reiving in Ireland, our knights and squires used as little armor as possible, and to be in unison with the general prejudice, our horses, though excellent in their way, were more remarkable for fleetness than size. On the occasion of Richard II.'s visit to Leinster, King Art Mac Murroch O'Kavanagh came to meet him at full gallop on a steed valued at four hundred cows. He no more indulged in the luxury of saddle or stirrups than the meanest horseman in his army. Thus mounted, and undefended by a cuirass, we cannot conceive how an Irish knight, were he as brave as Osgur, would venture to meet one of these gigantic lobsters already spoken of, mounted as they generally were on mighty war-horses; yet the experiment was often successfully tried, the Gael being defended with shield and mail shirt, and he and his steed being alert to turn aside, and wheel and make unexpected attacks on the more encumbered foe-man. Our author is mistaken in saying that Art assumed the title of King of Ireland. He only pretended to be what he really was—king of part of Leinster,—including Wexford, Wicklow, Carlow, and Kildare.

HOW ARMIES WERE RAISED AND DISBANDED.

One cause of the decay of the feudal

system was the substitution of fees or fines for the personal service. Generally the sovereign could not insist on the attendance of his forces beyond forty days. This was insufficient when fortresses were to be taken, or a descent made on a country beyond sea. The fines, or scutage, or shield money paid by defaulters, stood the monarch in good stead, as it enabled him to pay for extra services.

Besides the troops obliged to serve under the system we have described, all the males between the ages of fifteen and sixty were liable to be called on in case of civil disturbance. They formed the *posse comitatus* (strength of the county), and are at this moment represented by our special constables. In case of invasion this force was liable to be called out of the bounds of the county, but, no more than our militia, ever beyond the bounds of the kingdom.

The original meaning of our titles of honor, and the changes wrought in them, would require a treatise for themselves. The earl (*eorl*) was, during the Saxon times, the highest man in the State next the king. In Edward the Confessor's day the affairs of the entire kingdom seems to have been intrusted to five earls, three of whom were the celebrated Earl Godwin and his sons, Harold and Tostig. The name at first was not official in meaning, it merely implied *noble* as contrasted with *eorl* (*churl*). The ealdorman was a governor of a county—a *comes*\* or companion in fact; and as he was often called away from his district on the king's service he was obliged to have a *vice-comes* who has left his name, but not his office, to our viscounts. The Saxon name for county was *scyre*, and its governor was the—*Scyre-reve*—the shire's steward. Now the duke and the marquis (this last dignitary in spite of Moliere) have taken precedence of the mighty earl of Harold's days.

Every free man possessing goods or rents to the value of sixteen marks (£10 13s. 4d.) was obliged to have in stock a coat of mail, a helmet, a shield, and a lance. He could neither sell,

\* Thus designated by the king through the same motive of courtesy as induced him to style his noblemen cousins. The Irish designation nearest to knight is *curadh*, which means *comes* or comrade.

pawn, nor part with these arms, nor his lord deprive him of them on any account. No Jew was privileged to have these arms in his possession at all.

#### THE WRONG SIDE OF THE WAR-CARPET.

The reigns of the Edwards, so glorious to the country from a military point of view, were periods of misery to the populace. Besides demands for what may be called an extra conscription, bearing grievously on the then two and a half millions of England and Wales, the country was visited by pestilence. Alas! how little must that warlike sovereign have sympathized with his suffering people! He appeared before Calais with the finest army that Froissart had ever heard of, and was met by numerous chiefs of free companies ready to assist him "for a consideration." His answer was characteristic of the man and of his era. "He had brought a sufficient strength of his own from England, but if they chose to join his army, they would be entitled to their share of ransoms, plunder," &c.

Such was the want of laborers in England after the visitation of the plague, that in a statute then drawn up, it was decreed that "every able-bodied person under sixty years of age, not having sufficient to live on, being required, shall be bound to serve him that doth require him, or else shall be committed to gaol till he finds security to serve. If a servant or workman depart from service before the time agreed on, he shall be imprisoned. If any artificer take more wages than were wont to be paid, he shall be committed to gaol."

The parliament of the day not having access to any sound book on political economy, laid down the law concerning wages. In the first week of August a reaper's daily hire was to be 2*d.*, in the second a third more. A master carpenter received 3*d.* a day throughout the year, a journeyman 2*d.* Now, if money was then ten times as valuable as it is at present, the rate was not at all unreasonable. But it was monstrous that the daily pay of a soldier should be 6*d.* in many cases. In the Calais army list the pay of the meanest foot-soldier was 2*d.*, and that of the Welsh foot archers, 3*d.*

#### OUR IRISH ALLIES.

Then as now, however the English

might dislike their Irish neighbors, commanders of armies were ever glad to see them entering their ranks. The same may be said, indeed, of their distant relatives the Welsh and Cornish Celts. Edward I. had bands of Irish light horse in his Scottish wars. A strong force of Irish fought under Edward III. at Crecy, and they honorably distinguished themselves at the siege of Rouen. Hollingshed says on this subject:

"During the siege there arrived at Harfleur the Lord of Kilmaine in Ireland, with a band of 1,600 Irishmen in mail, with darts and skains (*scians*, long knives) after the manner of their country, all of them being tall, quick, and nimble persons, which came and presented themselves before the king lying still at the siege, of whom they were gently received and welcomed. They did their devoir so well that no men were more praised, nor did more damage with their enemies than they did; for surely their quickness and swiftness of foot did more prejudice to their enemies than their *barded* (covered) horses did hurt or damage to the nimble Irishmen."

Queen Elizabeth has never enjoyed the title of good Queen Bess among the mere Irish, yet she had no cause to complain of their backwardness in battle once they fairly enlisted among her soldiers. We quote our author on the subject of the expedition to the Netherlands:

"During the expedition the English suffered much from the want of proper clothing, an inconvenience from which the Irish kerns were free, for we are told that they habitually dispensed with clothing, an apron from waist to knee being the only protection of these wild kelts, who fought with the valor, and nearly in the costume of Homeric heroes. They are described by all contemporaries—English and Flemish—as the wildest and fiercest of barbarians, eating raw flesh, and speaking no intelligible language, fearing nothing, and sparing nothing, with as little regard for the laws of Christian warfare as for those of civilized costume."

Here be hard words for the poor kerns, the reporters forgetting that the mixture spoken by the soldiers among whom they found themselves, was as



unintelligible to them as the unmixed Gaelic used by themselves was to Normans or Saxons. Had their disparagers opened their eyes they would have spied the cloak fastened round their throat by, perhaps, a skewer, unless where they had brought some heirloom brooch from Ireland. The Deputy Senleger in his letter to Henry VIII., judiciously mixes praise and blame of the fathers of these last-named worthies:

"One sort be harnesssed in mayle and bassenettes, having every one of them his weapon called a sparre, moche like the axe of the Towre, and they be named galloglasse,\* and for the more part their boys (the kernes) bear from them three darts a piece, which darts they throw, or (before) they come to the handstrike. They do not lightly abandon the field, but byde the brunt to the deathe. The other sort called kerne or naked men, but only ther shurtes and small cotes, and many tymes whan they come to the bicker, but bare nakyd saving their shurtes; and those have dartes and short bowes, which sorte of people be bothe hardy and clever to serche woddes or marresses in the whiche they be harde to be beaten."

PRINCE HAL AT THE PAWNBROKER'S.

Our Henrys and Edwards must have been given up body and soul to the service of Mars and Bellona, for they not only inflicted dire hardships on their subjects for the prosecution of wars, but dared every moral and physical difficulty in their own persons.

When Henry V. was about invading France, he was obliged in the first place, to organize a body of lancers and archers to keep watch on the Scotch borders, and another to keep the wild Welshmen

from making descents on those counties that lay in their neighborhood. The Archbishop of Canterbury and other bishops were ordered to array their regular and secular clergy for the defence of the country. Some knights and squires of each county were directed at the same time to take an account of all the able-bodied men within their jurisdiction, and have them ready in time and place if needed.

As the campaign was to take place beyond sea, the forty days' service of obligation due by his nobles and knights was of no use to the warlike king. So he was obliged to secure the services of officers and men by regular pay—the *solde*, from which comes the name soldier. This pay was proportioned to the social, not the official, rank of individuals. For instance, a duke had 13*s.* 4*d.* a day, an earl, 6*s.* 8*d.*; a baron or banneret, 4*s.*; a knight, 2*s.*; a man at arms, 1*s.*; and an archer, 6*d.* The nobles and knights that gave their own services, and furnished the men at arms and the archers (convertible terms with galloglachs and kernes) engaged for one year. All prisoners of high rank paid their ransom to the king. The ransom of inferior prisoners, or of any thing valued above ten marks (£6 13*s.* 4*d.*) was to be divided between the king and captor.

The valiant Henry was obliged to disburse half of the first quarter's pay in advance, and give security for the remainder. This he did by intrusting to the chiefs who furnished the contingents a great amount of crown jewels and valuable plate, and indeed these were not redeemed till after his death. Sir Harris Nicholas says in reference to this event in the history of pawnbroking:

"A very unfavorable impression of the royal dignity is produced by these contracts, for while they prove the king's extreme poverty, they establish the degrading fact that the humblest squire in his retinue would not embark under his banner without receiving half a year's wages in advance or a piece of plate, a fragment of the royal diadem or some other valuable article, as security for payment. This caution must have arisen from experience of its necessity, and it may be inferred that the laurels, which adorned the brows of some of our ear-

\* *Galloglach*, foreign soldier; may be also interpreted hired warrior. These heavy-armed infantry were unknown before the English invasion. The *kernes* (*ceithearnach*, a sturdy fellow) when fighting at home against Danes or Anglo-Normans, mixed themselves with the horsemen of their party, sometimes running along by the steeds and holding them by the manes, at other times resting themselves on the crupper, to which elevation they sprang while the cavalry were going at full speed. When they came up to the enemy, and the cavalry on both sides were engaged, they employed themselves playing hide and seek among the animals' legs, and dealing destruction on the enemy with their scians.

liest monarchs, were gained by services which they repaid by treachery and falsehood."

Some of the indentures contained a clause that if these articles were not redeemed within a certain time they would become the property of the holder. The Lord Treasurer of England, the Earl of Arundel and Surrey, was the contracting party for the king, and the treasurer of the king's household, Richard Courtenay, Bishop of Norwich, held the indentures of the parties receiving the valuables for their safe return on being paid the sums stipulated for.

#### THE FREE LANCES.

These warlike monarchs, as before mentioned, received, in their foreign wars, much valuable assistance from Irish, Welsh, and Cornish auxiliaries. But Scotland not having been brought under the English crown, the rough and ready spearmen of that kingdom gave a world of trouble during the continental campaigns. Froissart gave a graphic description of an incursion in 1327, portions of the translation of which, by Lord Berners, deserve quotation:

"They take with them no purveyance of bread nor wine, for their usage and soberness is such in time of war that they pass in the journey a great long time with flesh half sodden, without bread, and drink of the river-water without wine, and they neither care for pots nor pans, for they seethe (boil) beasts in their own skins. They are ever sure to find plenty of beasts in the country that they will pass through. Therefore they carry with them no other purveyance, but on their horses, between the saddle and the pannel they truss a broad plate of metal, and behind the saddle they will have a little sack full of oatmeal, to the intent that when they have eaten of the sodden flesh, then they lay this plate on the fire, and temper a little of the oatmeal, and when the plate is hot they cast off the thin paste thereon, and so make a little cake in manner of a cracknell or biscuit, and that they eat to comfort withal their stomachs. Wherefore it is no great marvel though they make greater journeys than other people do."

Our available space enables us only to glance at the proceedings of the Free Companies, those scourges of society

during the middle ages. England's insular position, in a great degree, exempted her from the visitations of these worthies. However, the county of Essex furnished one of the most notable of the free lance captains to the disturbed theatre on the Continent. He was a tailor's son, the born vassal of John de Vere, seventh Earl of Oxford, and first served as private, and then as captain, in the army of Edward III. in the war with France. At its conclusion he joined with some of the free lances, and after helping to add to the miseries of France, passed into Italy in 1361 at the head of 3,000 adventurers. He fought in succession for the Republic of Pisa, for Bernabo Visconti, Lord of Milan, for Pope Gregory XI. against his last master who had defrauded him, and finally for the Florentines as the chief commander of their forces. In their service he died in 1393, having shown himself as faithful as the brave "Dugald Dalgetty" himself to all his engagements. An instance of the high esteem in which he was held is afforded by his receiving, in 1376, from Pope Gregory XI., as a sovereign fief, the castles of Catignola and Bagnacavallo. A street in their neighborhood, called the Strada Aguto ("Sharp Street," *Giovanni Aguto*, John Sharpe, being one of his Italian designations) still keeps his memory alive in Italy. Villani thus speaks of him:

"He was a great master in the art of war, and was naturally fox-like and cunning like the rest of his nation (*de natura, a loro modo, volpigno e astuto*)." Again, "Il suo soprannome in lingua Inglese era *Kaouchowole*, che in Latine dice *Falcone dè Bosco*." (His surname in the English tongue was *Kaouchowole*, which in Latin means Hawk of the Wood.)

The Briton takes no offence at being signalized as a bull, but Villani took a wrong way to his favor by imputing to him the qualities of the fox. A few sentences on the ordinary life of the free lances, taken from the same author, give some interesting information:

"The armor of almost all were cuirasses; their breasts covered with a steel coat of mail, gauntlets and armour for thighs and legs, daggers and broadswords. All of them had tilting lances, which, after dismounting from their horses, they were very dexterous in

handling. Every man had one or two pages, and some of them more, according to their ability to maintain them. On taking off their armour, it was the business of these pages to keep it clean and bright, so that when they came to action their arms shone like looking-glass, and thus gave them a more terrifying appearance. Others among them were archers, their bows long and made of yew. They were very dexterous and expert in using them, and did great service in action. Their manner of fighting in the field was almost always on foot. The horses were given in charge to the pages. The body they formed was very compact, and almost round. Each lance was held by two men in the same manner as the spear is handled in hunting the wild boar; and thus close embodied, with their lances pointed low, and with low steps, they marched up to the enemy with terrible outcry, and very difficult was it to break or disunite them. But after all, experience has shown that they were more fit for night expeditions, and for plundering villages, than for keeping the field, and their success was more owing to the cowardice of our own men than to their valor and military virtue. They had very curious ladders in pieces, the biggest of which were of three steps, and one piece socketed into the other like so many trumpets, and with these they were able to mount to the top of the highest tower."

Some of the names of the lowest orders of fighting men have come to imply rascals, and unprincipled folk in general. The brigandine was a good quilted leather lorica, on which, overlapping each other, were sewed light iron lozenge plates, an excellent body guard for light skirmishers like the Irish kerns. The greater portion of these warriors of low degree having no character to lose, have transmitted their names to modern inheritors of their vices, such as ribalds, brigands, &c.

#### A STANDING ARMY ORGANIZED.

With the reign of the unfortunate Charles VI. ceased most of the evils following in the tracks of the free companies, and most of the inconveniences attending the summoning of nobles and knights and their retainers to the battle field. The next monarch selected fifteen

captains who organized so many troops of cavalry, each consisting of 600 men.

These were to be kept on permanent pay. So were 16,000 infantry raised three years afterwards. This standing army being subjected to a discipline well maintained, there was felt little need afterwards for calling on the landed chiefs and their followers, and none at all for hiring the free companies. Sir Sibbald Scott observes with reference to this arrangement:—

"An important result derived from this change in the military administration of the State was, that as the strength of armies came to be estimated only by the number of disciplined men which they contained, so, naturally, the feudal nobles lost their influence, and in less than a century they and their tenants, though sometimes summoned to the field according to the ancient form, were considered as an incumbrance rather than an assistance, and were viewed with contempt by soldiers who had acquired experience in the operations of continued service. Thus the military regulations of Charles VII., by establishing the first standing army in Europe, occasioned a social revolution."

The following extract from an eulogy of this king, quoted in Michel's *Les Français en Ecosse*, presents a pleasing picture of the effects of the wise change:—

"The military established by law were paid by the people, and among them they dwelt in peace. They lived without any recourse to pillage, and the people felt well disposed towards them, and loved them, and requested the king to let them live where they received their pay. Their tunics (*hoquetons*) were of buckskin or sheepskin, or of dyed cloth."

In 1460 the son of Charles VII., Louis XI., took 6,000 Swiss into pay, and from that date till 1830, the French sovereigns were faithfully served and defended by these loyal partisans. Readers of the Waverley Novels know something of the Scottish archers, and the Irish Brigade has left pleasant memories behind it.

England was in no great hurry to follow the example of her neighbor. The spirit of the nation has always been adverse to the establishment of a stand-

ing army. The wars of the houses of York and Lancaster thoroughly engrossed the attention of the country till the reign of Henry VII., whose warlike achievements were confined to a "military promenade to Boulogne and back," and the institution of the Yeoman Guard.

"Henry VIII. instituted the corps of gentlemen pensioners, an expensive but strong escort of cavalry, which did him good service in his expedition to France." He needed no standing army, for his sway was so absolute that he could make the whole able-bodied force of his kingdom available at a very short notice. We find an order in his reign, directed to the archers, to carry halberds, which were stuck upright in the ground till their quivers were emptied. Then they proceeded to make use of them. From the battle of Bosworth to the civil war in the reign of Charles, with some trifling exceptions, the only military manifestations on English soil were confined to musters.

Though Chelsea hospital was not completed till the reign of Charles II., such an institution was projected by Queen Mary, as appears in her will, dated 30th March, 1558, in which she ordered her executors "to provide a house in London with an income of the clear yearly value of 400 marks, for the relefe, succour and helpe of pore, impotent, and aged soldiers, and chiefly those that be fallen into extreme povertie, having no pensyon or other pretence of lyvyng, or are become hurt or maymed in the warres of this realme, or in onny service for the defence and surete of their prince and of their cuntry, or of the domynions thereunto belonging."

It is out of our power to pursue our pleasant task farther. Besides it would require more space than any one magazine could afford to examine as they deserve the numerous branches of the subject so ably handled by our author. Besides the military history of the country, he dwells in detail on the institution of the body guards, standards and banners, general introduction of the lance, dragoons, hobilers and other varieties of mounted soldiers, great military reformers, infantry, and their clothing and arms, in which the pike is not forgotten;—in fact there are no arms, offen-

sive or defensive, used by British fighting men since the days of Cæsar, which have not been well described as well as presented in plates. Archery and its professors are treated of at great length. Several of the great battles of English and French history are described, with the arrangements made on each side, the chief movements and operations of the contending forces, and the apparent causes of victory or defeat. In fact there is scarcely a circumstance connected with the military affairs of the country calculated to interest the military student or the historian, which has been neglected. The value of the work is much enhanced by the full-page illustrations, upwards of 100 in number, in which will be found many military relics of arms and armor belonging to the remarkable personages of English History.

NOTE.—In the Article on "Hindoo Legends," in the April number of the UNIVERSITY MAGAZINE, a mistake was made by the writer in assuming that the collector of the tales was of his own sex. We are informed that the stories have been collected and reduced to writing by Miss M. Frere, daughter of Sir Bartle Frere, and illustrated by her sister. We beg to apologize for the mistake.

Blackwood.

#### THE LATEST LAWGIVER.

THERE are few things more curious than the shape taken by extreme cultivation in these days in many well-known examples. It is the result of causes sufficiently natural, but yet at variance with the established principles of thought. Wisdom, according to the received idea, ought to be something above the common prejudices and prepossessions of man, above the dreams of youth—ininitely calm, exquisitely reasonable, taking into account not only all the essential elements of humanity, but also its outward conditions, the way by which it has come in the past, the limits which bind it in the present. Such are the qualities we expect from philosophers when they enter upon the consideration of social questions, and cast anxious eyes away from their books upon the sad and weary world in which they live. All of us, whether philosophers or not, are but too well aware that it is a weary and a melancholy world. Might is still right among us far more fre-



quently than it ought to be. Folly gets uppermost notwithstanding all efforts to the contrary. Money swamps merit; falsehood gets the better of truth. Nor is the reckoning more reassuring when we leave considering the ways of man to man, and come to look at those which we broadly call Providence, the ways of God. God crushes as well as man; the hearts that are most sweet and full of divine charity are often the most hardly tried; the weary laborer to whom one touch of simple happiness, one word of kind encouragement, would give heart and strength for his work, has to toil on without either; no miracle drops down from heaven upon the suffering. Man sets his heel on the neck of his brother; and when the sufferer is at his earthly worst, heaven steps in with bereavements—disappointments—pangs of the soul. Such is the common fashion of the world. When any thoughtful man approaches this subject, it is but natural that we should expect from him a breadth of apprehension, a sober calm of vision. If it were but a complicated machine which had to be set right, this would be necessary; and the world is more complicated than any machine. A thousand things have to be taken into consideration by him who would throw any light upon its problems. There are its laws to study; and when the laws have been studied, there are countless exceptions, modifying circumstances, individual peculiarities, to be taken into account. Neither will it do to look upon it arbitrarily as it is to-day. Our philosopher must consider how it came to be what it is to-day. He must realize the power of those dumb unreasonable forces that are always at work among human things; he must acknowledge the innate deficiencies of the line and plummet to measure the needs and capabilities of men. It would be endless work to make a catalogue of all the restrictions under which he would have to bind himself. Where is the man to be found so calm, so clear-sighted, so tolerant, so reasonable, as to take up this greatest of all subjects, and throw any real light to us as we toil in the dark upon the difficulties of our time?

It is curious, and it would be laughable, were it not so profoundly sad and

beyond the reach of mirth, to note the spirit and manner of thought in which the subject is really approached by many of our latter-day prophets. To those who argue upon strict law there is little to be said. The science of political economy may or may not be true, but it is at least a science dealing with real or supposed laws, and bound to follow them out to whatsoever cruel consequences they may involve. We do not pretend to discuss any such system at the present moment. It is its avowed opponent who stands before us with the scroll in his hand, which is written within and without with other things besides lamentation and woe.\* Mr. Ruskin has taken up his position of prophet at his own hand. Nobody called him to that solemn and fatal eminence. The world received him with acclamation long ago into a high place in what seemed his natural sphere. He talked to us of art, and we listened; if not always agreeing, yet bound by the fascination of a voice full of the finest harmonies, the purest enthusiasms. He talked to us of clouds, and seas, and mountain lines, and those stones in which lie better things than sermons, and his audience hung, entranced upon his lips. Nobody contested his excellency in his own walk. We might, indeed, hold his opinions less than sacred, and retain some certain right of private judgment of which our critic was as jealous as any Pope; but nevertheless England was proud of her critic, who was in himself as great an artist as the old Venetians or the modern painters of whom he spoke. We are not informed what was the sudden inspiration or call of unknown voices which prompted him to leave this fair and peaceful eminence and rush up to the bleak hill-top where the prophets gather. He has himself avowed that their gift was not his. "By rights, I ought to be out among the budding banks and hedges, outlining sprays of hawthorn and clusters of primroses; that is *my* right work," he says; and between this work and that of legislating for a nation there is little analogy or even resemblance. Society, we fear, can never be trained into those fine and tapering lines which regulate the leaves of our trees, the

\* "Time and Tide by Wear and Tyne." Smith, Elder & Co. 1868.

petals of our flowers. There is nothing in it of kin with the innocent and spontaneous blossoms of the spring. The painter, the botanist, the observer of nature, require different faculties and another frame of mind from that demanded of a lawgiver; yet since Moses there have few more ambitious and catholic lawgivers risen among men than he who now addresses us from his blossomed orchard, with the counsel of birds and the breath of flowers to help him in his self-appointed task.

But we are wrong in saying that we do not know by what inspiration Mr. Ruskin has been thus forced from his natural occupation, and thrust up to that mount of vision on which the prophets dwell. He has himself told us the reason:

"It is not," he says, "in the inner gist and truth of it right nor good for you, or for anybody else, that Cruikshank, with his great gift, and I with my weak, but yet thoroughly clear and definite one, should both of us be tormented by agony of indignation and compassion, till we are forced to give up our peace, and pleasure, and power; and rush down into the streets and lanes of the city to do the little that is in the strength of our single hands against their uncleanness and iniquity. But as in a sorely besieged town every man went to the ramparts, whatsoever business he leaves, so neither he nor I have had any choice but to leave our household stuff and go on crusade such as we are called to; not that I mean, if Fate may be any way resisted, to give up the strength of my life, as he has given his; for I think he was wrong in doing so; and that he should only have carried the fiery cross his appointed leagues, and then given it into another hand; and for my own part I mean these, my letters, to close my political work for many a day; and I write them not in any hope of their being at present listened to, but to disburden my heart of the witness I have to bear, that I may be free to go back to my garden lawns and paint birds and flowers there."

Let us allow, without any further question, that this is a just and feasible reason why any man, whatever his private avocation, should interpose in the ill-regulated affairs of the world. He has a burden on his heart because of their misery, their hardships, all the wrongs and pangs they involve, and he must utter his burden or die. It has been such an impulse which has moved the greatest of prophets; once possessed by this fire in his veins, the man's

opinion is worth pondering, though his trade had been to work flowers in Berlin wool, instead of to paint them; and for this cause, if no other, we are ready to give our best attention to Mr. Ruskin. He has a fancy for foolish titles, which give a fantastic character, or at least the appearance of a fantastic character, to his books; but, after all, that is a trifling and superficial weakness. It is not to be denied that he is eloquent, that he is in earnest, and that he thinks there is something in what he has to say. What does it matter though a book be called "Sesame and Lilies," if there is really something in it worthy, at this crisis of human affairs, of the attention of men? "Time and Tide by Weare and Tyne" may suggest sketches of rude Northumbrian life instead of the polished musings of a philosopher in his garden; but that is a matter of the most trifling no-importance, if it be the fact that it conveys valuable information to us upon the problems of the day. We grant all these preliminaries without grudging to our new prophet. All we ask of him is that he shall really have this burden of prophecy, and that however fantastically in his own way, not in ours, he shall utter what wisdom is in him, and cast such light as he possesses upon the workaday puzzles of the world.

And in case our readers should not recollect what kind of globe this is, let us set before them the sphere and material upon which Mr. Ruskin means to operate. The system he propounds is not a modification or improvement of existing things, but an entire new code of laws. He proposes to make us new from top to toe. Therefore it is fit that we should realize, to start with, who and what we are. We are, in the first place, a nation which has long held itself up before Christendom as a model of freedom and constitutional perfection. We have struggled for hundreds of years against everybody who attempted to restrain our individual liberties. We have thought nothing of sacrificing a dynasty to secure to ourselves the right of being consulted either in pretence or reality about everything that was done for us. Age after age our struggle has been to extend further and further the bounds of personal freedom. Inquisition of every kind is utterly obnoxious to us. An English-

man is born with the proud privilege of going where he pleases, doing as he pleases, and, so long as he keeps the law and his reputation, being asked no questions. Even what he says, except in the most extreme cases, is his own affair, and one with which no official interferes. A Frenchman must be furnished with *ses papiers*, words which mean volumes to every Continental ear. A German, if he happens to be "wanted," has always a neat succinct little biography to go with him, compiled by a watchful State. But an Englishman's boast is that there is no biography of him anywhere—that nobody cares whence he comes nor whither he goes—that he may make what alliances he pleases, work when he pleases, idle when he pleases, subject himself to private tyranny if he likes, but resist all public espionage to the death. Our history is full of this leading principle. Generation after generation has thrown off another and another coil of social restriction—not convulsively, nor all at once, but with a patient determination, which shows how it has entered into the heart of the nation. All this is as well known as their A B C to most men. And it is to a nation of this kind that Mr. Ruskin, a well-educated Englishman, propounds his new code of laws. He is a Tory and Conservative, he says—he has no such horror of slavery, and no such unbounded faith in freedom, as have Englishmen in general. But still, we suppose, he is sane and in his right mind, and understands something of the analogy of facts. He would not propose to a community of Puritans an instantaneous plunge into all the dissipations of fashionable society; nor would he propose a course of severe philosophical study to the members of, say, the Pytheley or any other hunt. But what he proposes to do is stranger and foolisher than either—so strange indeed and so foolish that the public in the extreme absurdity of it is apt to lose a useful lesson, and greet with scornful laughter alone a sight which is well calculated to arouse more painful emotions.

For human folly, especially when in conjunction with human wisdom, is an affecting sight to behold; and there is something amazing in the calm with which a man, who is immensely above

the average in intellect, and still more so in cultivation, can look down from his eminence on hearts breaking and lives perishing, and utter forth his childish panacea. In such circumstances the destructive has a great advantage over the constructive philosopher. The former cannot but have a great deal of reason in his denunciations, and so long as he confines himself to these he is safe. No prophet can raise his voice too loudly against modern, as none has been too energetic against ancient, crimes and miseries. Our world is full of sordid sins, of shameless follies, of mean and shortsighted perversity. Whole classes among us bellow for freedom one moment, and bind themselves under a voluntary system of slavery the next. Others make loud proclamations of uprightness, and while they are doing it, exert their whole strength to defraud their neighbors. Since the world began, its history has been that of a series of crises, more or less violent, in which everything that was bad surged to the top with a force which threatened to swamp everything that was good and noble. The motive of the crisis changes from time to time, but the fact does not vary. And we are now in the midst of one of those violent emergencies. The special sin of the time is lawlessness or lawless selfishness—the reign of every man's special interest, or of whatever every man thinks his special interest, in antagonism to that of the species in general, and of all and every other man. Ours is a day in which every man does his work for his pay, and for no other motive; in which excellence has ceased to be desired or thought desirable, and fame, that last infirmity of noble minds, has gone out of fashion—a day in which we no longer care what becomes of our neighbors, but centre all our thoughts on ourselves. Ours is the age of trades-unions—societies which (whatever advantage may be in them, a question which it is not our business to discuss) hold their members down to a level of compulsory mediocrity and wield over their enemies the mysterious power of a *Vehme Gericht*; of competitions in which a man's ability to govern a province is proved by his capacity for remembering a date; a day of fraudulent bankruptcies, of mercan-

tile dishonesty, of rampant tradesmanship. It would be difficult to overestimate the real evils of the time. And there are plenty of voices—not sweet, perhaps, but serious enough—to proclaim it; voices, no doubt, that sometimes shriek fanatically, and sometimes overstep the boundary between the ridiculous and the sublime. There is Carlyle, with thunders of Jove, with wild lightning and storm-blasts, blazing and resounding in the upper horizon—to little practical purpose, yet with something of rugged grandeur, like a Norse demigod; there is the “philosopher” in and out of Parliament, perfect in theoretical wisdom, and logical beyond all human possibilities; there are the tribunes who rave against aristocrats, and the champions who rave against the people; there is, to go from great to small, the “Saturday Review,” in a corner, swearing, blaspheming, and tearing its hair in a blast against all women. In short, both the halves and all the ranks of humanity are indicated before many tribunals, and a very true bill—too true a bill in most cases—is found against them. The prophets, in their rage and passion, are always partly in the right. It would be difficult, in this present moment of commotion and internal ferment, to say of any that he was entirely wrong.

But it is a totally different affair when we come to schemes to set all this wrong right. Even in such a matter as the tenure of land in Ireland, how many plans are afloat—what wild suggestions are made—how bewildering are the chances on one side and the other! How much more when it is the reformation of a nation instead of the tenure of so many acres of soil! Yet, notwithstanding the difficulties of this vast subject, Mr. Ruskin has ventured upon it. His project is not put forth in one formal scheme, but is to be found in a series of letters addressed to an apparently intelligent working man. Their destination is the most appropriate thing in them. Had it been possible to imagine any intelligent working man in possession of a style so perfect as Mr. Ruskin's, these suggestions for a new code of national laws would have been exactly such as we could have imagined him to produce. The lion meets with the lamb in this new

but ever-recurring paradox. The dreams of an uneducated intelligence and the dreams of extreme and recluse cultivation encounter each other upon common ground. The defect in both is the same defect. The clever artisan who is superior to his fellows, who reads and thinks, and interests the educated spectator, goes wildly astray in his visions of the better time that is coming, because he draws all his ideas of it from books and his own crude reasonings, and leaves practical considerations aside as unimportant things. The student who lives in his library and his orchard, who takes counsel, he also, with his poets, and with the birds that believe in him and sing him their secrets outside, does something precisely similar. The two are each other's natural confidants and companions. The one by force of circumstances, the other by free-will or natural constitution, has put himself out of that training-ground of actual life in which all the complications, all the difficulties of humanity, come into play. This is the chief explanation of the curious foolishness, Utopianism, impractical character of the suggestions of so many men whose opinions ought to be eminently worth having. Men who have accumulated all kinds of information, and to whom the treasury of all the ages lies open, amaze us with plans as pretty and as futile as the fancies of an untrained intellectualist, or the generous visions of boy or girl in the age of optimism and all-belief. Such dreams may be noble in the case of the youth; they are pathetic in the case of the partially educated, who express in them at once the beauty and the weakness of superficial knowledge. But how shall we designate them in the case of those who ought to know better, to whom an acquaintance with the long results of time is a duty, who ought to be fully aware of the lessons of history and the capabilities of life? In such the folly is monstrous, the blindness wellnigh unpardonable; for it is a blindness which gives itself forth as insight, and holds out a reckless hand to guide the blind.

We will do our best to give our readers an idea of Mr. Ruskin's scheme, for their and our and England's deliverance from the evils that overwhelm us, in a consecutive form; that is, we will give



his proposals in such sequence as we can, though it is hard to know precisely where to begin. We shall, at hazard, and because it is of all points the most picturesque and attractive to the general world, choose the period of youth, the age of romance, and open the exposition by a sketch of what will be, in his new-formed world, Mr. Ruskin's way of dealing with his youths and maidens. As his mode is to expose the miserable inefficiency of our present arrangements, before producing his plan for their improvement we may mention that it is after a painful opening up of the subjects of over-work, and of rash and improvident marriages, the last being, in the cases he mentions, the cause of the first, and the whole ending in premature death, beggary, orphan asylums, and a liberality on the part of our philosopher which makes him unable to buy an edition of the "Flora of Java," which he particularly wanted—that he proceeds to his own suggestions for a new system. Let us say, however, by the way, that Mr. Ruskin is singularly indiscreet in instancing the cases in which his help has been called for. His description of the poor people who appealed to his not silent charity, is clear enough to be, no doubt, identified by many. It may be wrong of a poor barrister to die and leave a widow with eight children penniless on the world; and no doubt it is very wrong for personal friends of Mr. Ruskin to be on the brink of bankruptcy. But still that is no reason for holding them up to the public in all the deformity of their social wickedness. The general fact is strong enough, without these particular instances. There are thousands of people in the world who would rather give twenty pounds to a poor widow than to Quaritch the Bookseller for the "Flora of Java;" and, important though that work may be, and still more important as may be the work which Mr. Ruskin could have produced by its aid, still there are instances of self-denial more grievous. The argument, as it happens, would have been a great deal stronger without the illustrations.

But now for Mr. Ruskin's plan to prevent imprudent marriages, and to secure such unions as will not lead to orphan asylums and death by over-work.

"You leave your marriages," he says, "to be settled by supply and demand instead of wholesome law. And thus, among your youths and maidens, the improvident, incontinent, selfish, and foolish ones marry whether you will or not, and beget families of children, necessarily inheritors in a great degree of those natural dispositions, and for whom, supposing they had the best dispositions in the world, you have thus provided, by way of educators, the foolishest fathers and mothers you could find.\* On the other hand, whosoever is wise, patient, unselfish, pure, among your youth, you keep maid or bachelor, wasting their best days of life in painful sacrifice, forbidding them their best help and best reward, and carefully excluding their patience and tenderness from any offices of parental duty. Is not this a bestial and beautifully sagacious scheme for a Celestial Empire such as that of these British Isles?"

"Briefly, then, and in main points, subject in minor ones to such modifications in detail as local circumstances and characters would render expedient, these following are laws such as a prudent nation would institute respecting its marriages. Permission to marry should be the reward held in sight of its youth during the entire latter part of the course of their education, and it should be granted as the national attestation that the first portion of their lives had been rightly fulfilled. It should not be attainable without earnest and consistent effort, though put within the reach of all who were willing to make such effort, and the granting of it should be a public testimony to the fact that the youth or maid to whom it was given had lived within their proper sphere a modest and virtuous life, and had attained such skill in their proper handicraft, and in arts of household economy, as might give well-founded expectations of their being able honorably to maintain and teach their children. No girl should receive her permission to marry before her 17th birthday, nor any youth before his 21st, and it should be a point of somewhat distinguished honor with both sexes to gain their permission of marriage in the 18th and 22d year, and a recognized disgrace not to have gained it at least before the close of their 21st and 24th. I do not mean that they should in any wise has-

\* Here Mr. Ruskin interposes a parenthesis. ("The only rational sentence in their letters, usually, is the invariable one in which they declare themselves 'incapable of providing for their children's education.'") He has just before quoted a letter from an artist's wife asking for a presentation to Christ's Hospital, in which this sentence occurs. Poor mothers, who may chance to have a visionary faith in the great writer, beware! Other men may equally refuse to grant your prayers; but few are likely to turn a happy sentence by means of such pitiful petitions.

ten actual marriage, but only that they should hold it a point of honor to have the right to marry. In every year there should be two festivals—one on the 1st of May, and one at the feast of harvest-home in each district—at which festivals their permission to marry should be given publicly to the maidens and youths who had won them in that half-year; and they should be crowned, the maids by the old French title of *rosières*, and the youths, perhaps, by some name rightly derived from our supposed signification of the word 'bachelor,' 'laurel fruit,' and so led in procession, with music and singing, through the city street and village lane, and the day ended with feasting of the poor, but not with feasting theirs, except quietly at their homes."

Listen, ye heavens, and O earth! this is how the first great social difficulty of England is to be cured.

This pretty Watteau picture, however, is but the beginning. When we have led our *rosières* and our bachelors through the streets, with music and singing—a little ceremonial which, when conducted by way of Bond Street and Piccadilly, will be a sight for the gods—we have but completed the preface, and have yet a hundred things to think of. We will not ask Mr. Ruskin if he is aware of the fine strokes of wit to be found in French dramas in respect to these same *rosières*, but assume them to be just what he supposes them—spotless young creatures brought up in accordance with his own instructions in the "Ethics of Dust," to dance, sing, dress, and cook, the great arts and offices of women, and taught to consider this permission to marry as the great object of their existence; a mode of education differing from most recent suggestions, but yet proposed on the whole by as competent a critic as M. Duruy, or the Oxford and Cambridge assessors, or the "Saturday Review," the principal authorities on the subject. We go on, however, to the necessary steps which follow. Mr. Ruskin does not inform us that these young graduates in life are to be publicly guided in their choice of partners. On this point we have only mysterious hints about the "regulation of marriage;" about looking after the marriages of the poor, in order to correct irregularities of feature and expression among their descendants; and "giving some of the attention to the conditions affecting the race of

man, which has hitherto only been bestowed on those which may better its races of cattle." For the moment, however, it seems plain that our philosopher has shrunk from direct legislation on this subject. He has left the young people to their own likings, or to a vague general direction. We are left to imagine that they do make a selection and settle into pairs, and here again the beneficent paternal lawgiver steps in.

"Every bachelor and *rosière* should be entitled to claim, if they needed it, according to their position in life, a fixed income from the State, for seven years from the day of their marriage, for the setting up of their home; and however rich they might be by inheritance, their income should not be permitted to exceed a given sum proportioned to their rank for the seven years following that in which they had obtained their permission to marry, but should accumulate in the trust of the State until that seventh year in which they should be put (on certain conditions) finally in possession of their property; and the men thus necessarily not before their twenty-eight, nor usually later than their thirty-first year, become eligible to offices of State; so that the rich and poor should not be sharply separated in the beginning of the war of life, but the one supported against the first stress of it long enough to enable them by proper forethought and economy to secure their footing; and the other trained somewhat in the use of moderate means, before they were permitted to have the command of abundant ones. And of the sources from which those State incomes for the married poor should be supplied, or of the treatment of those of our youth whose conduct rendered it advisable to refuse them permission to marry, I defer what I have to say till we come to the general subjects of taxation and national discipline."

These latter questions are not attained to in the present volume, so that we can throw no light on the two important matters above indicated; nor are we able to say what amount of dereliction of duty, what depth of ignorance of proper handicrafts and arts of domestic economy, would disqualify our boys and girls for the rank of bachelors and *rosières*. We may mention, however, at this point, that Mr. Ruskin has a—

"Long-fixed conviction that one of the most important conditions of a healthful spirit of social economy would be the restraint of the properties and incomes of the upper classes within certain fixed limits. The temptation," he adds, "to use any energy in

the accumulation of wealth being thus removed, another and a higher ideal of the duties of advanced life would be necessarily created in the national mind: by withdrawal of those who had attained the prescribed limits of wealth from commercial competitions, earlier worldly success and earlier marriage, with all its beneficent moral results, would become possible to the young; while the older men of active intellect, whose sagacity is now lost or warped in the furtherance of their own meanest interests, would be induced unselfishly to occupy themselves in the superintendence of public institutions or furtherance of public advantage. Out of this class it would be found natural and prudent always to choose the members of the legislative body of the Commons."

The picturesqueness at least of this scheme is even more distinctly visible than that of the previous sketch. Let us imagine the flood of elderly personages sent back to us from the City when the mystic numerals are set against their names, and their wealth has reached that point of well-defined perfection; the merchants stopped at their office doors, and the manufacturers sent back from their manufactories; even such a thing might be as that a benignant and paternal Government should take gently the pencil from the hand of the successful painter, the pen from that of the popular author. "Enough," would England say, shutting the ledgers, the looms, the libraries; and it is of course quite natural that the dismissed workers should spread themselves over the face of the country without delay, and look after museums and public libraries. The House of Commons would employ but few; but Mr. Ruskin must feel that the gain to public instruction from the superintendence of such *emeriti* would be unspeakable. No doubt the regulations to be adopted in the case of those who are born to an income beyond that permitted by the State, will be worked out along with other details of this most feasible and reasonable proposition. Curiously enough, however, our lawgiver suggests that this law, which "would never be imposed on themselves by the upper classes," should be "gradually brought into force from beneath, without any violent or impatient proceedings." The suggestion is certainly a strange one; but it must not be supposed that Mr. Ruskin is a Radical and

a Leveller. He is "a thoroughbred Tory and Conservative," and as such, of course, incapable of any proposal of a revolutionary kind.

All this time, however, we have left our young couples married and with their State allowance for seven years to make themselves comfortable. They have been so paired as to secure good looks and perfect health for their children, who, as soon as they are born, become the care of the State. Whether they are to be permitted to remain in the charge, and be influenced by the individual fancies of their parents for some small measure of time, Mr. Ruskin does not tell us; nor indeed are we sure whether we are not doing great injustice to his young couples by supposing that they may have individual fancies; but, however, by the time the new-born citizens are fit for school, the State is to be ready to relieve their progenitors of all trouble. "The first elements of State education should be calculated equally for the advantage of every order of person,"—which, we presume from what follows, is to say that all are to begin school together, peasant and prince. The first thing taught them is to be "the laws of health and exercises enjoined by them,"—a study to which, even in the present imperfect state of affairs, we are apt to believe but too much attention to be given in our great public schools as at present existing. The difference of the schools in Mr. Ruskin's new world seems to be that all the population will meet in them without distinction of class. They must be "in fresh country and amidst fresh air, and have great extents of land attached to them in permanent estate." Nor is Eton itself so liberal in the exercises provided as Mr. Ruskin will be. His elementary course of instruction is to consist of "riding, running, all the honest personal exercises of offence and defence" (in which, of course, *le boxe* would figure in the first rank), "and music." Eton, as we have said, does not attempt anything so liberal. The exercises of offence and defence are there left to nature, and riding is forbidden; so that the new system will appeal much more to all gentlemanly sympathies than does the old.

"Next to these bodily accomplishments, the two great mental graces should be taught,

Reverence and Compassion; not that these are in a literal sense to be 'taught,' for they are innate in every well-born human creature, but they have to be developed, exactly as the strength of the body must be by deliberate and constant exercise. . . . To test reverence rightly is to attach it to the right persons and things: first by setting over your youths masters whom they cannot but love and respect; next by gathering for them out of past history whatever has been most worthy in human deeds and human passion; and leading them continually to dwell upon such instances, making this the principal element of emotional excitement to them; and lastly by letting them justly feel, as far as may be, the smallness of their own powers and knowledge as compared with the attainments of others.\* Compassion, on the other hand, is to be taught chiefly by making it a point of honor collaterally with courage, and in the same rank (as indeed the complement and evidence of courage), so that in the code of unwritten school law, it shall be held as shameful to have done a cruel thing as a cowardly one. . . . Reverence, then, and compassion we are to teach primarily, and with these, as the bond and guardian of them, truth of spirit and word, of thoughts and right. Truth, earnest and passionate, sought for like a treasure and kept like a crown. This teaching of truth as a habit will be the chief work the master has to do; and it will enter into all parts of education. First, you must accustom the children to close accuracy of statement; this both as a principle of honor and an accomplishment of language, making them try always who shall speak truest, both as regards the fact he has to relate or express, not concealing or exaggerating, and as regards the provision of the words we express it in, thus making truth (which indeed it is) the test of perfect language, and giving the intensity of a moral purpose to the study and art of words, thus carrying this habit of accuracy into all habits of thought and observation also, so as always to think of things as they truly are, and to see them as they truly are as far as in us rests. . . . For this, as well as for many other reasons, the principal subjects of education after history ought to be natural science and mathematics; but with respect to these studies your schools would require to be divided into three groups, one for children who will probably have to live in cities, one for those who will live in the country, and one for those who will live at sea—the schools for these last of course being always placed

on the coast. And for children whose life is to be in cities, the subjects of study should be, as far as their dispositions will allow of it, mathematics and the arts; for children who are to live in the country, natural history of birds, insects, and plants, together with agriculture taught practically; and for children who are to be seamen, physical geography, astronomy, and the natural history of sea-fish and sea-birds."

When our lawgiver has to come to this point, finding it all perfectly plain sailing, and entertaining no doubt that moral qualities may be taught in his schools instead of Greek or Latin, he suddenly finds himself in a dilemma. It strikes him all at once that there is a weak point in his armor. "Probably," he cries, "you may say after they have learned to ride and fence and sing, and know birds and flowers, it will be little to their liking to make themselves into tailors, carpenters, shoemakers, blacksmiths, and the like. And I cannot but agree with you," adds the candid philosopher, "as to the exceeding probability of some such reluctance on their part, which will be a very awkward state of things indeed, since we can by no means get on without tailoring and shoemakings, and one to be meditated upon very seriously in next letter."

But by the time Mr. Ruskin has come to the next letter he has managed to give his problem the slip. He allows that it is not to be expected that "a youth properly educated—a good rider, musician, and well-grounded scholar in natural philosophy"—should like to be made a tailor or a coalheaver; and then he turns upon his supposed questioners, "my sensible and polite friends," indignantly, and asks them if "it is necessary to limit the knowledge, the active powers and the enjoyments of a certain portion of mankind from childhood upward, so that they may not be able to conceive of any state better than the one they were born in, nor possess any knowledge or acquirements inconsistent with the coarseness or disturbing the monotony of their vulgar occupation?" This, of course, is simply begging the question; for he himself has granted that tailors and shoemakers are indispensable. To escape from the difficulty of having made such homely craftsmen impossible, our lawgiver immediately turns to another side of the dilemma in

\* This one little touch of real good sense and judgment shows strongly amid the exalted nonsense which surrounds it. To teach dead languages may or may not be the soul of education; but where is the schoolmaster that would undertake to teach a mental grace?



which he has placed himself. Supposing the coalheavers to be found, what would be made of the rest? He should want no soldiers in his new economy, "for all my boys would be soldiers; lawyers should be banished altogether from the country; doctors would be of no use to this athletic population, and would starve; clergymen we should want, but of a totally different character from the existing class."

Mr. Ruskin's answer to our difficulty is thus to produce another. He winds up with a scornful suggestion that the two great classes of religionists, the evangelicals and ritualists, should be requested to take upon them, by way of a proof of their Christian humility, the "servile offices" for which his pupils would be too well educated. We scarcely like to venture to remind our teacher that the children of these very ritualists and evangelicals might perhaps have faces of angelical expression as well as the children in St. Giles's, and that their benighted fathers could only last out a certain time, so that it would be short-sighted and improvident to trust to them as providing a constant supply of hewers of wood and drawers of water. The question demands deeper consideration than he has chosen to give it. Who are to be the tailors and the coalheavers in the new England?—if not the young fellows who can ride and fence, who shall fulfil these necessary functions? Or must we accept it as Mr. Ruskin's intention that we should all fall back after this perfect training on the economy of primitive times, and become every man his own tailor and shoemaker? Shall we all weave our homespun, and make and wear it? Shall we re-establish among us the habits of the day when Adam delved and Eve span? It was as good a system as another, or perhaps better, as Lord Dundreary says; and a man who could ride and fence, &c., might not have the same reluctance in making his own shoes that he would have in making shoes for his neighbors. In this way everybody would have something to do. The born coalheaver, after he came in from his daily canter in the Park, might not refuse to take off his coat and replenish his own coal-cellar. The lordling, after he had run through the chief airs in the last opera, or prac-

ticed a difficult sonata, might take a turn at a coat for the evening, and thus keep himself out of mischief. A sweet unanimity would thus be established in the lives of those who had been bred in the same noble educational establishment, though there would, we fear, be little unanimity in the cut of their garments. And the men who could neither be soldiers, lawyers, nor doctors, might each keep his children in boots without any loss of self-respect. At least if he could not, we don't see where the boots would come from, nor does Mr. Ruskin. The only other solution of the problem is one which we dare but whisper under our breath. Perhaps this crowning generation, born of the wedded *rosières*, trained at the schools of a new world, may be intended as a solemn climax to the population of England, not to increase and multiply at all, but to die of their own perfection, with no children to seek boots or training from them, the *fine fleur* of humanity, the culmination and apotheosis of our race.

We cannot think, however, that Mr. Ruskin intends this. He means the tailoring and shoemaking to get itself done somehow; and might we not avail ourselves here of the prophetic warnings of another great social philosopher, and suggest that the women should be made to do them—those women of whom the "Saturday Review" despairs? Being good for nothing else, and not, we suppose, being trained to ride and fence, why should not they be put into the servile occupations? Is not this the case in all the free primitive nations—those glorious pristine races whom civilization has not spoiled?

Our chief reason for suggesting this simple way out of the difficulty is, that Mr. Ruskin has provided for the rule and government of his new world, and consequently cannot mean it to come to a speedy end. We have already mentioned that all incomes are to be confined within a certain limit, and every man who has attained to that limit is to be turned adrift, and made use of in the way of looking after museums. Thus the population is clearly accounted for, and in the most symmetrical way. First, the bachelors who are led through the streets with music and singing, each with his permission to marry in his

pocket; then the young couples with an allowance from Government, and their children, who are all learning to fence and ride under the rational inspection of the State; and, lastly, the apex of all, the fathers who have made as much money as it is lawful to make, and who have retired to South Kensington and the Boilers. Now we come to the practical government of this picturesque and well-constructed society. So far as we can make out, the House of Commons is not to be abolished; on the contrary, indeed, *Paterfamilias*, from the office where he is not allowed to make any more money, may step in there and make himself comfortable; but the active officers of the State are to be the Bishop and the Duke. The bishop is not exactly the solemn personage in lawn sleeves whom we are apt to think of in connection with that title. He will be found described in "*Sesame and Lilies*" in the forty-fifth and forty-sixth pages of the same. The description is rather a vague one. It is one which "the ecclesiastical journals laughed at as a rhapsody when the book came out, none having the slightest notion of what I meant; nor indeed do I well see how it could be otherwise," says Mr. Ruskin with magnificent superiority. We, however, less modest than the ecclesiastical journals, have a kind of notion of what he means. He tells us that "the first thing a bishop has to do is at least to put himself in a position in which at any moment he can obtain the history from childhood of every living soul in his diocese, and of its present state. Down in that back street, Bill and Nancy knocking each other's teeth out—does the bishop know all about it? Has he had his eye upon them? Can he circumstantially explain to us how Bill got into the habit of beating Nancy about the head? If he cannot, he is no bishop, though he had a mitre as high as Salisbury steeple." We humbly venture to conclude from this that a bishop, according to Mr. Ruskin, is what many people believe the office to be—an overseer, not over priests and pastors, but over souls,—in short, a parish priest, and nothing less or more; a fact which he has chosen to disguise under the title of bishop, popularly supposed to mean something quite different,

he himself alone knows why. Supposing this to be the case, let us proceed to consider the place held in Mr. Ruskin's new social economy by this important functionary.

"Putting all questions of forms and names aside, the thing actually needing to be done is this—that over every hundred (or some not much greater number) of the families composing a Christian State, there should be appointed an overseer or bishop, to render account to the State of every individual of these families, and to have care both of their interest and conduct to such an extent as they may be willing to admit, or as their faults may justify; so that it may be impossible for any person, however humble, to suffer from unknown want or live in unrecognized crime; such help and observance being rendered without officiousness either of interference or inquisition (the limits of both being determined by national law), but with the patient and gentle watchfulness which true Christian pastors now exercise over their flocks, only with a higher legal authority, presently to be defined, of interference on due occasion. And with this further function, that such overseers should be not only the pastors, but the biographers of their people,—a written statement of the principal events in the life of each family being annually required to be rendered by them to a superior State officer. These records, laid up in public offices, would soon furnish indications of the families whom it would be advantageous to the nation to advance in position or distinguish with honor, and aid by such reward as it should be the object of every Government to distribute, no less punctually, and far more frankly, than it distributes punishment; whilst the mere fact of permanent record being kept of every event of importance, whether disgraceful or worthy of praise, in each family, would of itself be a deterrent from crime, and a stimulant to well-deserving conduct, far beyond mere punishment or reward."

Let us take our breath a little after this. If there was any probability in the nature of things of Mr. Ruskin becoming the lawgiver of England, should not we all do well to follow the steps of another philosopher, for whom this poor island appears more and more a failure, over the Atlantic, or to the end of the world? Perhaps it was a prevision of the time when his bishop would furnish a yearly biographical sketch of him and his family and all their doings, to the State, which prompted Mr. Goldwin Smith to shake the dust from his shoes, and betake himself to a worthier place.

We too will *faire nos paquets* before this searching enactment becomes law. Long ago in the distant ages, we remember to have travelled in a German Schnellpost with an old lady, English by birth, whose home was by the banks of the Danube, and who was eloquent on this very quality of a paternal government. Nobody, she said, could be lost or hide himself in guilty obscurity who lived under the Austrian rule. A sketch of his life, history, antecedents, and prospects, was always to be found at the nearest police office. It was a system beneficent, and almost divine, which only such a government as that of Austria could have carried out. In those days most people were young, and one listened with comic respect and amusement. But our new lawgiver goes further than our old lady. It is in England—irregular, many-cornered, eccentric England, where every man's house is (said to be) his castle, and intrusion on your neighbor is the sin of sins—that this beautiful arrangement is to come into being. All our little errors of judgment; what our brothers were about that time when they were absent from home, and the mother's eyes were red; whose debts had to be paid; what burdens had to be taken up; all the family slips and troubles, to be chronicled by our overseer, and laid up in the State records for ever and ever, from year to year! Before that time comes, oh innocent households, people not living reclusé in gardens, but astir among the agonies, the secret passions, the pangs and martyrdoms of life, let us pull up our stakes and fold our tents, and move away into the silence and the wilderness, where no prying philosopher nor chronicling bishop ever peeps into our sacred gates!

There is, however, another office above that of a bishop which has yet to be set forth. This is the office of Duke, which is explained as follows:—

"Above those bishops or pastors who are only to be occupied in affairs of familiar supervision and help, should be appointed higher officers of State, having executive authority over as large districts as might be conveniently (according to the number and circumstances of their inhabitants) committed to their care; officers who, according to the reports of the pastors, should enforce or mit-

igate the operation of too rigid general law, and determine measures exceptionally necessary for public advantage. For instance, the general law being that all children of the operative classes at a certain age should be sent to the public schools, these superior officers should have power, on the reports of the pastors, to dispense with the attendance of children who had sick parents to take charge of, or whose home-life seemed to be one of greater advantage for them than that of the common schools, and who, for any like cause, might justifiably claim remission. And it being the general law that the entire body of the public should contribute to the cost, and divide the profits, of all necessary public works and undertakings, as roads, mines, harbors, and the like, and that nothing of this kind should be permitted to be in the hands of private speculators, it should be the duty of the district officer to collect whatever information was accessible respecting such sources of public profit; and to represent the circumstances in Parliament, and then, with Parliamentary authority, but on his own sole personal responsibility, to see that such enterprises were conducted honestly, and with due energy and order."

Such is to be the Duke, a bustling, serious, out-of-door official, evidently with a degree of possibility about him. At least his Grace would press less hard upon us than his reverend colleague, and if he would procure us some dividend from our taxes, some infinitesimal fraction of profit from the tolls we pay and the imposts we groan under, would be a highly serviceable official, and commend himself to all our hearts.

These principles of domestic government being settled, Mr. Ruskin goes into a few details in the region of social economy, but, unfortunately, in a vague kind of way. He calls the book in which this code is contained the "Laws of Work;" but it is clear that he is by no means so sure about how to manage work as he is about the bachelors and rosières, the schools for riding and fencing, and the bishops and dukes. In general the rule he gives is, first, that everybody shall do everything well; second, that everybody shall be sufficiently paid for doing so; third, that nobody shall be too much paid. There is a kind of approximation in the two latter provisions to the law of the trade-unions, which we take to be that, first, everybody should be paid as much as he can manage, by fair or unfair means, to get for his work; and second, that no-

body should be permitted, by superior workmanship, patience, industry, genius, or the like, to gain more than his neighbors. In this general view Mr. Ruskin agrees. We quote below a few sentences on the co-operative system, which treat, though vaguely, of the first unfair advantage which a man has over others—that of capital; and afterward as to the second—that of skill or genius. His views on the former subject are as follows:—

"The question is really whether the profits, which are at present taken, as his own right, by the person whose capital, or energy, or ingenuity has made him head of the firm, are not in some proportion to be divided among the subordinates of it. I do not wish for a moment to enter into any inquiry as to the just claims of capital, or as to the proportions in which profits ought to be, or are in actually existing firms, divided. I merely take the one assured and essential condition that a somewhat larger income will be in co-operative firms secured to the subordinates by the diminution of the income of the chief. And the general tendency of such a system is to increase the facilities of advancement among the subordinates; to stimulate their ambition; to enable them to lay by, if they are provident, more ample and more early provision for declining years; and to form, in the end, a vast class of persons wholly different from the existing operative-members of society, possessing each a moderate experience. . . . On the other hand, by the exact sum which is divided among them more than their present wages, the fortune of the man who under the present system takes all the profits of the business would be diminished, and the acquirement of large private fortune by regular means, and all the conditions of life belonging to such fortune, will be rendered impossible in the mercantile community. The magnitude of the social change hereby involved, and the consequent differences in the moral relations between individuals, have not as yet been thought of, much less estimated, by any of your writers on commercial subjects."

Thus the system to be adopted under the new code is one by which the income of every clerk, assistant, and workman will be increased, and the acquisition of private fortune made impossible. As to the second point—that of personal talent—the deliverance is as follows:—

"Large fortunes cannot honestly be made by the work of any one man's hands or head. If his work benefits multitudes, and involves positions of high trust, it may be (I do not say it is) expedient to reward him with great

wealth or estate; but fortune of this kind is freely given in gratitude for benefit, not as repayment for labor. Also men of peculiar genius in any art, if the public can enjoy the product of their genius, may set it at almost any price they choose; but this, I will show you when I come to speak of art, is unlawful on their part, and ruinous to their own powers. Genius must not be sold: the sale of it involves, in a transcendental but perfectly true sense, the guilt both of simony and prostitution. Your labor only may be sold; your soul must not."

The natural consequence of this is that every worker must become a stipendiary of the State—that all the profits of all the trades, from the highest to the lowest, must go into one immense treasury, from which the whole of us—day-laborers, skilled artisans, merchants, painters, scribblers, poets, and all the rest—shall obtain, "according to the rank of it, fair pay for fair labor"—a state of affairs under which the capital of the Barings will not serve them, nor the genius of Mr. Ruskin advance his interests, but all be lost in a blank of equal income and equal rights. We have no objections, for our own part, to be thus on a level with the last lawgiver; but yet surely he is aware that the world is not a new world created yesterday, but an old world, with a history showing very clearly what human nature is, and the principles upon which men have lived and labored for some few thousand years.

Our readers will probably ask with amaze how it is possible to regard with any sort of gravity this system of impossible economy, and whether anything but inextinguishable laughter is fit criticism for such a scheme. But the laughter with which such dreams must be received is always tinctor with a deep gravity. The folly of wisdom is a melancholy thing, and the egotism and self-worship of genius is more lamentable still. Mr. Ruskin is not a common man nor an ordinary critic; and it is sad to see him thus holding himself up to the ridicule of men. No doubt it is a beautiful thing, theoretically, when a man of high attainments applies himself to the instruction of the ignorant, and, with a friendliness and brotherliness beyond praise, enters into correspondence with the homely artisan whose aspirations after intellectual and moral progress



have so just a claim on his sympathy. But there is a drawback even to such goodness. The artisan may be no way inferior in nature, and is, without doubt, equal in the sight of God, to any prince or peer. But yet, the gulf of education or training is one over which no man can pass to go to the other, any more than Lazarus could. The want of education is more than it seems on the outside. Mr. Ruskin's humble friends may have as delicate sensibilities as he has. They may appreciate and enjoy that inheritance of literature which belongs more or less to every Englishman. They may perceive as keenly the beauties of nature, and may be as sensible of the broad rules of justice and truth. What they cannot have, except in very special instances, is that artificial experience—if we may use such a word—which is given by liberal training and knowledge of the world. A man who is confined all his life within a narrow sphere *must* be wanting in knowledge of all these curious complications of civilization, all the wonderful network of opposed interests, which make up modern life. Time or temperament may give him that true wisdom, insight, and human toleration, which are the highest qualities of the sage, within the bounds of his personal influence. But an uneducated statesman is about the one impossibility. Book-knowledge, such as can be acquired wherever there is a library, is not enough to form this development of human power. The lowly legislator dreams, and his dreams may be beautiful. To his inexperienced eyes there is no reason why the most unlikely results should not be made to ensue. He has a belief in power even when he resists it, which exists in no other class. In the generosity of poverty he can conceive of any surrender of fortune. To a man who must always, at the worst, have ten, twenty, a thousand times more than *he* has at his best, it must be so easy to give up the immeasurable superfluity. He believes in reason, too, with a simple faith which is often accompanied with the sublime of unreasonableness. He thinks the world may be convinced by eloquence, and will bend to truth, and answer infallibly to the touch of the helm, when it is touched by Genius, Beneficence, Wisdom. There is a beauty

in this noble folly in the mind of the inexperienced and uneducated. In the abstract it is finer, perhaps, purer, more attractive, than anything practicable. But its very beauty is the mark of its weakness. It is a thing of air and clouds, incapable of life.

Such is precisely the system which with deadly seriousness, and with all the graces of genius, Mr. Ruskin has set before the world. He does not even introduce it with the consciousness of a speculatist, but rather with the air of a prophet, who knows that the scheme he propounds is absolutely and divinely right. We may laugh or smile or cry at the exhibition, so far as he is himself concerned; but it is impossible to think of anything more injurious to the class which he specially addresses. We do not say that he flatters this class; on the contrary, he gives them very hard hits on many occasions, and points out their practical weaknesses with zeal and unction. The harm he does them is, that he sanctions by his example their own Utopian fancies—that he justifies this dreaming, which in them is excusable, by practicing it himself, though in him it is inexcusable. For this reason the smile with which we began to consider his code sinks into seriousness. In his case, peculiar as his mind is, and curious as is the conjunction of absurdity, simplicity, and beauty, the tenderest grace of thought and speech with the utmost foolishness of suggestion, the mischief may not be great. For Mr. Ruskin's folly is too ethereal and his schemes too elaborate to catch the common eye. But he is not the only philosopher who has thus suffered his position as popular preacher and guide of untutored understandings to reduce him to the fancied level of those whom he instructs. There can be no greater danger both to the taught and the teacher. What we gain by the intercourse between the classes which is involved in lectures and correspondences like this, we lose in the perversion of influence which seems to follow—the lower class, with its necessarily narrow views and fantastic hopes, dragging down, as it seems, the higher with its advantages of culture and liberal education, instead of the latter widening, calming, and opening up, as it ought, the intelligence of the former.

It is this which gives any importance or seriousness to the curiously futile little book which is the last of Mr. Ruskin's works. It is to be hoped that his readers, more acute than himself, may perceive how he shirks every question he raises, and to what a comical chaos of impossibility he brings his supposed new social world; but it is a pity that any gentle reader of the "Manchester Guardian" should be misled by so distinguished a name and so fine a talent to think that these wild dreamings are social philosophy.

This little book, too, in itself is a curious illustration of the evils of self-regard. There are many quotations in it, but they are mostly from Mr. Ruskin's works. "Modern Painters," "Sesame and Lilies," and "The Crown of Wild Olive," would seem to form the largest portion of his library, or, at least, to be the books he most believes in. His correspondent varies the selection by allusions to Carlyle's "Frederick," but Mr. Ruskin would not seem to set much store by "Frederick," or indeed anything beyond the little list given above. These books are weighty and precious to him. He gives thanks to heaven for having been permitted to write this and that golden sentence. And then he is eloquent in little pictures of himself and his surroundings. He meditates "before breakfast under the just opened blossoms of my orchard, assisted by such melodious advice from the birds, who (my gardener having positive orders never to trouble any of them in anything, or object to their eating even my best peas if they like their flavor) rather now get into my way than out of it when they see me about the walks, and take me into most of their counsels in nest-building." He "never reads anything in spring-time except the *Ai*, *Ai* on the 'sanguine flower inscribed with woe.'" In short, Mr. Ruskin himself, his garden, his blossoms, his birds, and his works, rank perilously high in the estimation of that brilliant writer and man of genius. He is charitable, but impatient of men who will have large families and die of over-work. He is spiteful at the poor lady who asks for a presentation to Christ's Hospital. After all, it would not be worth while being a governor of Christ's Hospital

if there were not some people in the world incapable of providing for the education of their children. And Mr. Ruskin is ready to weep when he tells us that his subscription of £20 for the poor widow made him unable to buy the "Flora of Java," and his contribution to the Eyre Defence and the Cruikshank Memorial Funds kept him from going to Switzerland. With a certain acrid satisfaction he tells us that in both cases it is the public which will be the eventual loser; for

"I am writing a book on botany just now. . . . And though you may think it not the affair of the public that I have not this book on Indian flowers, it is their affair, finally, that what I write for them should be founded on as broad knowledge as possible." So again: "I suppose that when people see my name down for a hundred pounds to the Cruikshank Memorial, and for another to the Eyre Fund, they think only that I have more money than I know what to do with. Well, the giving of these subscriptions simply decides the question whether or no I shall be able to afford a journey to Switzerland this year in the negative: and I wanted to go, not only for health's sake, but to examine the junctions of the molasse sandstones and nagelfluh with the Alpine limestone, in order to complete some notes I meant to publish next spring on the geology of the great northern Swiss valley—notes which must now lie by me at least another year; and I believe this delay (though I say it) will be really something of a loss to the travelling public, for the little essay was intended to explain to them, in a familiar way, the real wonderfulness of their favorite mountain the Righi; and to give them some amusement in trying to find out where the many-colored pebbles of it had come from."

The public thus, by forcing Mr. Ruskin to subscribe for the widow, and for Cruikshank and for Governor Eyre, has balked itself of two pleasures; which clearly proves that the public needs to be totally remodelled, and earth and heaven regulated on a new plan.

It is curious how thin and querulous the richest voice grows when it deploras and sympathizes with itself. We are sorry to say it of Mr. Ruskin, whose voice is capable of so much better things. In these very books, spoilt as they are with this narrow spirit of egotism, there are "bits" of the tenderest feeling, charming touches of criticism, full of thought and insight. Why will not he forget a little that he is Mr.

Ruskin, and suffer himself to be, and to write, spontaneously, without so much fuss about it? Either among the pictures or the primroses, the mountains or the cathedrals, he will then be the best of company. But heaven forbid that he should bring with him his bachelors and rosières, his bishops and dukes?

Sharp's Magazine.

#### CARDINAL WOLSEY.

BY U. A. JACKSON.

THOMAS WOLSEY was born in 1471. The era was propitious for the development of his genius. The battles of York and Lancaster; the terrible hatreds of those rival houses; the blow aimed at legitimacy in the murder of the infant princes in the Tower; the usurpation of Richard; the revolt of his disaffected nobles; the battle of Bosworth-field; and finally, the ascension of the throne by Henry the Seventh, had racked England to its centre. The best blood of the nation had been spilled on the battle-field or the scaffold. All the instruments of vindictive and unscrupulous power had been employed by the successful aspirants to crush or exterminate their rivals. Learning, the arts, manufacture, mechanism, commerce had suffered; religion had, in a measure, lost its hold upon the people; the bonds of family and social affection had been shattered; chivalry had almost waned, and the links of a common interest, loyalty, religion, nationality, that bind together a people in the pursuits of life, were snapping asunder beneath the blows of internecine war and the sudden changes of government. It was at such a period that Henry the Seventh ascended the English throne. It was at such a period that Cæsar became master of Rome, Alexander of Greece, Cromwell of England, and Napoleon of France. Henry the Seventh also, like these arbiters of mankind, had his work—though less brilliant in history than theirs, still serviceable and important—to perform. The task of regenerating the English character was before him, of putting together the elements of its disjointed nationality. He lacked the genius to achieve a complete success, and it was reserved for Wolsey to advance the neglected interests of reli-

gion, of learning, of commerce and of law, and to confer upon England a substantial power and influence, as the arbiter of European difficulties. It is Wolsey, then, as one who promoted the material and intellectual interests of his race, of whom we wish to write. We therefore expend no time in discussing the probabilities of his mean or noble birth. Whether he was the son of a butcher or a gentleman, matters little to those who wish to contemplate the splendor of his character, the grandeur of his designs, the purity of his motives, or the manner of his death. It matters not what were the ancestries of those men whose fame depends merely upon their own stern exertions for place, power, and fame. We delight to honor them because they were great: not from the adventitious circumstance of birth; but from labor, from hard blows given and received in the conflict of life, from heroism on the battle-field, from piety in the church, from devotion to the wants of humanity, whether suffering in poverty, groping blindly in ignorance, or wandering in the dark shadows of heathenism. The poet, the soldier, the philosopher, the statesman, the saint, is great of himself, from intrinsic merit, not from the circumstances that may have surrounded his birth. It is Thomas Wolsey, then, the great Cardinal, the distinctive English mind of his age, the man who left his mark broad and deep upon English character, not Thomas Wolsey born gentleman or butcher, whose life we wish to follow.

We omit to notice particularly the education of Wolsey, and his early efforts as a student. That they were arduous, the whole tenor of his career demonstrates. From what we know, however, of his earlier and undistinguished life, we may infer that there was little of the ascetic in his disposition. While vicar at Lymington, his impetuous temper led him into a riot, the result of which was the stocks. Is there not at least one point of similarity between the great Cardinal and Friar Tuck?

Wolsey first came under royal notice as chaplain of Henry the Seventh. This position he obtained through Sir Richard Nanfaun, whom he had served at Calais. While occupying this office, he more than once recommended himself to his

royal master by the prompt discharge of duties intrusted to his care. The King's appreciation of his chaplain was such, that Wolsey obtained the deanery of Lincoln, and other offices of honor and emolument.

On the 22d of April, 1509, Henry the Seventh died. In many respects he was a remarkable man. He exhibited in glaring contrast the qualities of greatness and meanness. Personally brave, he had none of the chivalric sentiments of the soldier. With strong common sense, he yet developed an avarice so overpowering as to blunt not only the nice perceptions of honor, but even the ordinary dictates of justice. The sufferings of Richmond's youth had not taught the mature years of Henry the great Christian lessons of mercy or forbearance. The death of Henry was hailed with almost as much joy as that of his predecessor Richard.

His son and successor, Henry the Eighth, was personally popular. His character as a man and a sovereign has been a prolific theme of discussion among historical writers; but none who merit the regard of earnest inquirers have attempted to conceal or excuse those vices with which in this present essay we have most to do, and to which we shall presently advert.

Upon his ascension of the throne he arraigned and punished the abettors of his father's tyrannical avarice. But there is no mention of his having depleted the bursting coffers of the old king in such acts of restitution as would have shielded the memory of his father from obloquy and disgrace. Their golden treasure opened a vista of never-ending pleasure to the son, which overcame the stern demands of justice and the dictates of filial piety.

Wolsey at this time was thirty-eight years of age, Dean of Lincoln and almoner to the King. He had shared the youthful pleasures of his master, but while participating in his dissipations, had evidenced his own great powers of mind and consummate practical ability. Henry, from amid the gay revellers who thronged his court, selected Wolsey as his favorite adviser, having discovered in his powerful and conservative intellect the very element which he needed to give strength and dignity to the govern-

ment, which his own turbulent and reckless disposition might in the outset of his reign have sadly shattered.

At this time Julius Second was the Roman pontiff. Julius was a priestly soldier, a fiery, irascible, but withal a large-hearted man, and more of a patriot than a saint.

He had recently become involved in a quarrel with Louis the Twelfth of France. Ferdinand of Spain, the father-in-law of Henry, supported the Pope and drew the English King to the Italian interest. A war with France ensued, in which the English gained no substantial benefit. Wolsey accompanied the army, having the superintendence of its commissariat. The advantages he reaped from this campaign were substantial. One was his introduction into the vacant Bishopric of Tournay after the taking of that city. Other victories, however, beside the few barren triumphs in France, crowned the English arms. At home the battle of Flodden-field, so vividly described in Scott's immortal verse, was fought and won for Henry.

Shortly after Henry's return to England Wolsey was elevated to the Archiepiscopal See of York. He was now on the full tide of royal favor. He possessed the potent word that ruled the wayward passions of the King. He was no longer the mere man of pleasure, but the earnest statesman, ready for any emergency, and capable of conducting any affair of state, however complicated its relations or difficult its character. His duties were important and onerous, his responsibilities vast, and his demeanor was that of one who, in controlling the destinies of a great people, not only knew the importance of his office, but placed a high estimate on his own services. And for this princely manner, which fitted him so well, which he honored in the wearing, and which draped gracefully about him as the folds of a Roman toga, he suffered the aspersions of unwarrantable pride; he was accused of the sudden assumption of a mantle which, from social position, he had no right to wear; he was regarded as an upstart from the ranks of life, who had no sooner thrown aside the livery of the menial than he assumed the pomp and dignity of the lord. But let those who accuse Wolsey of undue arrogance,



haughtiness, and love of power, when the favor of his sovereign had invested him with wealth and influence, remember that human nature is the same in all men and in all ages; that Wolsey's disposition was imperious, that his aims had no limit, that he loved magnificence of retinue, of habiliment, of household garnishment, because that age invested human greatness with magnificence and display; that he loved power, and put forth the energies of a giant will to obtain and hold it, because, without affectation, he well knew that his intellect could better serve his country than that of any lordly courtier, whose heart was in the revels of the palace, whose soul could take no flight beyond the pleasures of sense. Before his mind's eye was placed a great object, and to reach it became the constant effort of his life. The dreams of the young priest in his cloister were realized by the Archbishop in his palace. He saw in England a capacity of development that no continental kingdom possessed. He found a system of law which was daily strengthening its proportions. He found a commerce which, though sadly disturbed by civil war, might become the wonder of a world. He found a sturdy, hearty yeomanry, with a national character as unbending as the oak; a character which could give England the position of umpire of the world, perhaps make her island kingdom a mother of nations, another Rome.

And he found too, and regarded with a hostile eye, a nobility proud, wealthy, and powerful, which might be the terror or the bulwark of the throne, which for centuries had disregarded right and law, had time and time again excited the masses against the sovereign power, but to oppress those masses untrammelled by a government stronger than itself. In short, he found the buds of glorious national promise, which he determined to unfold, and the seeds of evil which he resolved to destroy. How well he succeeded English history can proudly witness.

In the latter part of the year 1515 Wolsey was elevated to the Cardinalate by Leo the Tenth, and about the same time the Great Seal of England, with the office of Chancellor of the Realm, was given him. Wolsey now held one

of the highest offices in the church; was, by virtue of his Chancellorship, the first officer of the kingdom; and, more than all, possessed the confidence of the King. His remarkable character and his rapid elevation made him the cynosure of all eyes. European sovereigns, wishing to negotiate with England, regarded Wolsey as the proper mediator between themselves and his King. England was then just beginning to exercise that influence in the councils of Europe which she subsequently so largely developed. A character like Wolsey's was well adapted to give that young influence those advantages of growth which is needed in the acquisition of strength. His powers of mind were not only felt at home, but, in their clear, strong, and conservative management of diplomatic negotiations, were felt, respected, and feared by foreign potentates. Nobly did the Cardinal exercise his official functions and the gifts of his intellect for the honor of England.

It was the period for such a mind to employ itself to the greatest possible advantage. A revolution, social, political, and religious, was taking place in the Christian world. The art of printing was placing knowledge within the grasp of the people. Statesmen were beginning to take wider views of the relations of government than those of peace and war; men who had bowed blindly at the shrine of Rome were putting away the darkness from their vision and inquiring after truth; commerce was rapidly increasing in importance, and demanding exact principles for its regulations; and the necessities of people and of governments were evolving from creative and thinking minds a new science, that of political economy. And aside from the effects which these causes were producing in the social and mental condition of Europe, and which, to some extent, occupied his attention, Wolsey found ample scope for his energy in compacting alliances and settling quarrels between European sovereigns. Francis the First of France was warring with Maximilian, Emperor of Germany; Selim, the Sultan of Turkey, was pushing his arms so victoriously in Western Europe, that Christendom trembled at his successes; and Leo the Tenth, the

Pope of Rome, though devoted to the softer and more enervating pursuits of life, thought no less than his bluff, soldier-like predecessor, Julius Second, of maintaining the power and dignity of the church.

The victories of Selim induced a cessation of hostilities between Francis and the Emperor, and led to the organization of a crusade which might have renewed in the Holy Land those scenes in which, centuries before, Richard and Saladin were the actors, had not the death of the Sultan quieted the note of preparation. The cessation of hostilities gave Wolsey an opportunity to compact in 1518 a league between England, France, Spain, Germany, and Rome. The effects of this treaty were felt for centuries, although the treaty itself was observed but for a limited period. Says an eminent writer: "The treaty itself may be regarded as one of the fundamental statutes of that great code which, till the era of the French Revolution, continued to be the laws and constitution of the European nations."

In 1519, Maximilian, Emperor of Germany, died, and the imperial throne was open to royal competition. Henry the Eighth, grasping at every shadow of power, stretched forth his hands to clutch the crown, but, like an atmospheric illusion, it glided from his reach. Francis and Charles of Spain were the competitors for whom the vote of the empire was divided. The contest between Francis and Charles was gallantly conducted, but the wary policy, the vast territorial possessions of the Spanish king, and the prestige of his descent, at last decided the victory in his favor. Here is, then, a new character introduced, at a very early age, upon the arena of public events—a character in which the world has found so much to wonder at, to admire, condemn, and despise, that we hardly know where or how to settle our opinion. In Charles the Fifth the world found a moral anomaly. Possessing all the keener instincts of the man, he lacked all the finer attributes of the hero. With a mind comprehensive in its grasp, and bold in its conclusions, and with a will inflexible in character, he exhibited a meanness of soul, a duplicity of mind, an utter depravity of political sentiment.

In an age in which statesmanship and diplomacy were beginning to exercise their legitimate functions, such a man, exercising as he did an important influence, must have given a tone to those transactions between nations in which he was engaged, as pernicious as the promptings of his own evil spirit. In an age when the gallant maxims of chivalry yet survived the decay of the feudal system, and as king of a land whose warrior nobles had scarce half a century before occupied the proud position of the first knights in Europe, he treated a brother-king, his prisoner, in a manner so abhorrent to all the better sentiments of humanity, so like a malefactor of the vilest kind, that all Europe, roused to its manly feeling, pointed at the royal jailer the finger of undying scorn.

With such a man Wolsey now came in contact. The new Emperor, an adept in the art of reading character, saw Wolsey's power and determined to enlist it in his favor. He visited England, and while there promised to assist the Cardinal in his effort to obtain the papedom. The friendship of Charles for his Chancellor flattered Henry, and he offered his co-operation in the scheme. Charles solicited the powerful alliance of the Cardinal, because he foresaw that France and Spain could not remain long on terms of amity. And soon the storm lowered portentously over Europe; but, before it burst upon the nations, a scene transpired in which Francis and Henry were the actors, which, as the last great event in the history of chivalry, claims especial comment. Just after the departure of Charles for England, a meeting took place between the kings of England and France, at a spot in the vicinity of Ardres and Guisnes, which, from the magnificence that marked its character, gave it the name of the "Field of the Cloth of Gold." The nobles attending their respective kings indulged in a splendor of array that has rarely, if ever, been equalled in the history of such meetings. It was the expiring effort of chivalry. The light of knighthood went out at the "Field of Gold," with no dim flicker, but with a flash of splendor which for a brief moment illumined the world, and lent a meretricious glory

to the death of a system which had accomplished its great aims. That system which had its origin at the tomb of our Saviour, which for long centuries had preserved, amid ignorance and brutality, the germinating seeds of humanity, of gentleness, of love, paled before the light of a new thought, which was to usurp its place and perform its labor, actuated by the highest Christian motives—that new thought, the Reformation.

At the "Field of Gold" another treaty was compacted between Henry and Francis; but, like most of the treaties in that age of Punic faith, it was soon broken.

The storm of war now burst upon France, Spain, and Italy. After a variety of fortune upon either side, the fatal battle of Pavia gave Francis a prisoner into the hands of Charles. The Emperor now was at the acme of his power. France was humbled, and Italy was at his feet. Bourbon, one of his generals, approached Rome, and demanded a passage through the city on his way to Naples. Permission was refused, but Rome was sacked. Bourbon was killed in the assault, but his troops pressed on to victory, signaling their success by the most atrocious outrages.

And now, having briefly glanced at a few of the principal events in Europe during a portion of Wolsey's career, and at such of the principal characters of the age as came in immediate contact with him, we propose to examine more closely the life of the Cardinal, and discuss in such a manner as our short space will admit, the projects and actions which have rendered him famous—have obtained for him the gratitude, or covered him with the reproach of his countrymen, and those circumstances of his career which indicate the character of the man. In so doing, we must consider the age in which Wolsey lived, his profession and his position.

At this time family power was very great in England. Education was, in a ratio to ignorance, fearfully small. The natural conservatism of mankind, always ignoring the demands of progress, found an ally in the Anglo-Saxon nature, fond of old usages and customs, and yielding little credence to proposals of reform. It suited the purposes of the

English nobility, as it still suits the purposes of tyrants everywhere, to keep the masses in their normal condition of ignorance and superstition. They found the priesthood willing to lend its assistance to this vile labor of repression.

Especially did the nobility dread such an influence as Wolsey's. They feared and hated it, because they feared and hated any system of education which might arouse the dormant energies of the people. Rank has always been the enemy of power acquired by mere force of intellect, unaided by the mere circumstance of birth and wealth. It has ever interposed obstacles between the efforts of such intellects and the reforms they proposed. It has ever seen, in the elevation from humble life of men of genius, sure and deadly blows aimed at its prerogatives. In this light was Wolsey regarded by the haughty nobility of England. They saw a giant intellect, with aims as capacious as the universe, arise from the ranks of life, and take precedence of their oldest houses. Dukes, marquises, and earls, boasting the descent of a thousand years, and arrogating to themselves almost royal dignity, trembled in his presence. Before the flashing eye and noble brow of the poor butcher's son, radiant with the glory of genius, these men found their level. Wolsey's greatness was a crime they could not forget or forgive. They would gladly have given that head teeming with mighty plans for English honor, to the scaffold; they would have trampled him beneath their feet, and given his name and thoughts to obscurity. But gloriously did the plebeian Cardinal attest the fact that from the pure untainted blood of the masses come the rulers of the world; grandly did he demonstrate his power of thought, and for England perform labors that centuries of common mind could not have effected.

We will regard the Cardinal from three points of view: his reformation of the church, his administration of justice, and his participation in the divorce of Queen Catharine.

The age of Wolsey was also that of Luther. The church, in the estimation of reasoning men, whether Papists or Reformers, presented so many vulnerable points, from its depravity, from the

scandal its licentious ministers had brought upon it, that all who valued truth, justice, or purity of sentiment, desired its reformation. When Leo the Tenth ascended the Papal throne the corruption of the church was terrible. The new Pontiff was not the man to set an example of purity of life—had not the nerve or courage, with the inclination, to root out abuses, to effect such superficial improvements in the church as would have quieted the cry of reform by removing its apparent necessity. Well was it for the world that Leo the Tenth lived just as he did. Had a pope then reigned possessing the spirit of Hildebrand, and the purity of Gangelinelli, the strength of the Reformers might have been broken by concessions ere it had matured; but by one of those providences the supervision of which all the crises of history demonstrate, the reform in Germany was strengthened by the haughty demands of Rome, by the increasing depravity of its rulers, by the utter disregard it paid to the wants of its people, and by its negation of the word of God.

The character of Leo the Tenth is one which art and literature have preserved from utter detestation. He was a *De Medici* in every sense. Learned in all the literature of the world, elegant, courtly, and refined in manner and address, with a mind subtle, keen, and powerful, devoted to the success of art, of literature, and of poesy, he was in soul a sensualist, each day placing before his church an example of luxurious indolence, and at last falling into a long dream of pleasure, the prison of his noble faculties, whose golden bars were only broken by the rude hands of Death. The historian has written for him a splendid eulogy; the poet has linked his name with all the graces in immortal verse, and around his memory the kindred arts have thrown an intellectual halo, whose glories steal over the mind as the odor of some rich perfume is gently wafted to the delighted sense; but no devoted biographer can record to him a single action that ennobled his great priestly office; no churchman, however blinded to the faults of his order, can give to the character of Leo the Tenth the highest name of all—Christian.

To such a man was the church of the sixteenth century to look for leadership. The result was such as Luther, Melancthon, and Zuinglius foresaw and predicted. The conventual system became the byword and reproach of men. The mendicant orders were the disgrace of every country in which they existed. Vice stalked with its "hideous mien" amid the ghostly fathers a welcome guest, with not even the cloak of refinement, of learning, of love of art, to drape its disgusting features. The system, too, was eating up the wealth of kingdoms. In England statutes were passed and legal ingenuity taxed to avoid the rapacity of the monasteries. When, therefore, Wolsey's clear, practical mind examined the system, its bearings, and its tendencies, his love for England, his grand idea of intellectual progress, his noble Anglo-Saxon manhood awoke with honest hate, and the doom of the cloister was sealed.

The King invested him with a commission to examine into the state of the ecclesiastical abodes, and vigorously was the work prosecuted. Wolsey's plan was to reduce the number of monks, and to convert the monasteries into cathedrals and colleges. He was too zealous a Catholic to entertain for a moment the idea that he was, by so doing, reducing the power of the clergy over the people; but the motive which induced his action was to improve the mental condition of the clergy, to give them that knowledge which is power, to render them really entitled to that dignity with which the people invested the sacerdotal office. By his vigorous and decisive measures he incurred the bitter hatred of the priesthood. He was accused of every vice, and reproached for an ambition called by his detractors insatiable. But they little knew their man. Amid the assaults and calumnies of the envious, he calmly, sternly pursued his task; he awarded his sentences, and posterity has pronounced them just. Men said, why should one who indulges in every pleasure himself, attack others whose inclinations are similar? It is true that Wolsey's establishments were costly and magnificent, that he lavishly expended large sums in decorations and displays which passed with the occasions which prompted them. But all his



splendor did not adorn the man; he lent dignity and gave enduring interest to the scenes which his taste invested with that splendor. It is the picture the mind draws of the Cardinal, towering above the sensual revellers at his banquets, which gives them their historical character.

With all his display, Wolsey was no sensualist. He invested his high station with what belonged to it. He was every day dealing with the magnates of Europe through their ambassadors; his King constantly visited the Cardinal's residence, and the manners of the times required his acquiescence. The accusations, then, which the British monks, roused from their supine and brutal ignorance by his determination to devote the misspent conventual revenues to worthy objects, made against him, sink into utter insignificance. The cry of sensual prodigality was but the impotent railing of men so radically wrong that no remedy but the most severe could be applied. And against such men as Thomas Wolsey—whose names are recorded as those of friends of progress, promoters of great schemes for the public good, lovers of learning, true, practical, eloquent expounders of law, morals, or religion, great workers in the development of national character, as those of men who float not with the stream of life, but fight earnestly with the current—the accusation of sensual indulgence, of love of pleasure, of relaxation of nerve for the dangerous toying with the bubbles of life, pass with the slanderous breath which uttered them, when history unfolds to view the scroll of their fame.

Wolsey's educational efforts should be remarked here, for they are intimately connected with his purgation of ecclesiastical abodes.

Griffith, apostrophizing England, says to his mistress, Queen Catharine, of the Cardinal:

"Ever witness for him,  
Those twins of learning that he raised in you,  
Ipswich and Oxford! One of which fell with  
him,  
Unwilling to outlive the good that did it;  
The other, though unfinished, yet so famous,  
So excellent in art, and still so rising,  
That Christendom shall ever speak his virtue."

Wolsey had been educated at Oxford,

and he manifested during his prosperity the deep affection he entertained for his Alma Mater. In 1523, with the Queen, he paid Oxford a visit of state. The heads of colleges exerted themselves to obtain the good offices of the Minister. They submitted to him for revision the statutes of the University; and notwithstanding the strenuous opposition of Archbishop Warham, the Cardinal undertook and accomplished the task. From this period the University began rapidly to improve. The colleges, which hitherto had been the seats of scholastic indolence, now gave evidence of that growing activity which was to unfold for English minds those precious germs of thought whose development had been thwarted by monastic ignorance, and to give a popular direction to learning, which hitherto had been confined within the narrow channels of theological dogmatism. Aware that the awakened interest of the colleges in the cause of education needed the stimulus of material encouragement, Wolsey founded certain lectures on the various branches of learning, and then proceeded to endow and erect Christ-church College. This foundation was upon the revenues of twenty ecclesiastical abodes which had been suppressed on account of the profligacy of their inmates. The splendid scale upon which this college was undertaken, the popular character of its course of study, the great collection of books proposed for its library, was the initiative of that educational progress which England has so nobly sustained. The dozing brains of the priestly triflers with knowledge received a shock that awakened them from their stupor. The pedants that adhered to the old philosophy were startled from their syllogisms. They were about to witness the induction of a new system, which blended literature, philosophy, and science, in a triune unity, against which scholastic divinity might hurl in vain its ponderous tomes of wasted thought, and from which its assailants, defeated and disheartened, fled, to wail in their cloisters over modern degeneracy. The ultra-conservatism of that age uttered the same lamentations that fogysm breathes in our own.

Wharton, in his elegant history of English poetry, says: "The Cardinal's

College was one of the first seminaries of an English University that professed to explode the pedantries of an old and barbarous philosophy, and to cultivate the graces of polite literature."

Cambridge, emulous of the progress of her rival Oxford, soon after submitted her statutes to the judicious revision of the Cardinal. The school at Ipswich was founded upon a plan similar to that at Winchester and Eton, and the funds for its support, as in the instance of Christ-church College, were drawn from the revenues of dissolved monasteries.

But these efforts on behalf of education drew upon Wolsey the hatred and envy of many persons of rank and power. Archbishop Warham was first among the clamorous throng who sullied his virtues and magnified his faults. Detraction—quiet, sinuous, terrible—was employed to accomplish his ruin. Wolsey, however, shrewd and politic, managed to maintain his influence with the King, and to promote his favorite projects. He and his detractors have passed away, but the great monuments of his learning and wisdom remain. Christ-church College has stood prosperously through the lapse of centuries, the impulse he gave the universities never ceased to vibrate, and his name, encircled by the chaplet of the Muses, still indicates the power of industry and courage.

We will now advert to Wolsey's administration of justice as Chancellor of England. In the latter part of the year 1515 the Great Seal was given him. When he entered upon the duties of his office, he found that he must either yield to the ignorance of the practitioners in his court and to the arrogance of the Common Law judges, or seize at once the reins of authority with a firm hand, and administer justice in accordance with those principles which professedly were the guides of equity and jurisprudence. He did not hesitate in the adoption of his course. He possessed a mind so comprehensive in survey, so rapid in thought, analysis, and conception, that it brushed from every case submitted to its consideration the webs of chicanery, dashed aside sophisms, however ingenious, and went by an intuitive logic directly to its merits. And it required

such a mind to undertake the task Wolsey proposed to himself. It became his ambition to render the Court of Chancery worthy its title and design. A great work was before him. He found the lawyers prejudiced and ignorant, the common-law judges arrogant, presumptuous, and jealous of equity jurisdiction. He found the law in the hands of men so tenacious of precedent that they forgot principle, and denied the controlling influence of circumstances in the interpretation and application of legal theories.

"During the reign of Henry the Seventh," says Lord Campbell, "no attention was paid to the improvement of the laws, or the administration of justice, except with a view to extorting money from the subject, and amassing treasure in the Exchequer." Again he says: "Equity decisions, at this time, depended upon each Chancellor's peculiar notion of the Law of God, and the manner in which Heaven would visit the defendant for the acts complained of in the bill."

Wolsey remedied the evils which the feeble administration of former Chancellors had developed and encouraged. He asserted for his Court the authority which of right belonged to it. He was undoubtedly very decided in the measures employed to assert and uphold his jurisdiction; there is no questioning the fact that his judgment was arbitrary, and brooked no opposition; that he stretched equitable jurisdiction to its utmost limits; but no accusation of injustice in his decisions was ever made, and even his most bitter enemies hardly ventured to impugn the honesty of his administration as Lord Chancellor.

He encouraged the practice of granting injunctions, and his frequent application of that remedy was made an article of his impeachment. Such was his determination to enforce his authority as Chancellor, that he reprimanded in person, and that severely, the magistrates who ventured to disregard his injunctions. In his effort to elevate the tone of practice and argument in his Court, "he," as Lord Campbell says, "openly complained that the lawyers who practiced before him were grossly ignorant of the civil law and the principles of general jurisprudence; and that

he often interrupted their pleadings, and bitterly animadverted upon their narrow notions and limited arguments."

It cannot be asserted that Wolsey was the father of any great system of law, or that he originated any new and particularly efficacious methods of practice; but he did establish on a firm basis equitable jurisdiction; he stimulated the ambition of the lawyers to a wider field than that of mere precedents and cases; he conceived a plan for a school, in which law should be taught as a science, and he tolerated in his Court no practice that savored of corruption. Justice was equitably administered when Wolsey was Chancellor. He was prompt, indefatigable, and industrious; and it is recorded of him, that he seldom erred in his decisions. He gave an impulse to the Court of Chancery, which his successor, the great Sir Thomas More, and other Chancellors, encouraged, until English equity jurisprudence has grown into a body of law which, in breadth and purity of principle, challenges the admiration of all who have studied it, and excels, in the generality of its application, all systems which the ingenuity and learning of different ages have adopted.

We now come to regard the Cardinal from the third point of view, his connection with the divorce of Queen Catharine. The matrimonial history of Henry the Eighth is so well and generally known, that it requires here little comment by way of introduction to Wolsey's connection with the divorce. "Bluff King Hal," as Henry was called, concealed beneath a hearty English manner and exterior, passions so utterly detestable in their nature, that no one hesitates in ranking him with those crowned monsters whose characters have disgraced humanity. His first wife, Catharine of Spain, was the widow of his elder brother, Arthur. Henry married her shortly after his ascension of the throne. One of her maids of honor was Anne Boleyn, a lady of great beauty and attractive manners. Henry, inconstant to his wife, became enamored of Anne, and determined, in order to marry her, to obtain a divorce from Catharine, upon the ground that their marriage was a nullity under the canon-law, which prohibited the marriage of a man with his brother's

widow. This, however, was a shallow pretext; for a dispensation in favor of the marriage had been granted by Rome, and Henry affected qualms of conscience merely to gratify his unsatiable lust.

In 1527, Henry appears finally to have determined to obtain a divorce from Catharine. He sought the advice of Wolsey in the matter, unfolding to him his own views of the validity of his marriage with Catharine, and asked his co-operation in the effort he was about to make to obtain a divorce. The Cardinal assented to the plan proposed by Henry, for he had resolved, if a divorce was obtained, to negotiate a marriage between Henry and Renée, a sister of Louis the Twelfth, in order to cement more firmly the alliance with France. But when Henry named Anne Boleyn as the successor of Catharine, and the proposition of marriage with Renée was peremptorily rejected, Wolsey perceived the grave error he had committed, and implored Henry to banish the thought of such an alliance from his mind. But the King was inexorable, and Wolsey yielded.

In this assent to the divorce of Catharine was the great error in the career of the Cardinal. To gratify the evil passions of his royal master, he deviated from the path of rectitude, and exerted all his energy and influence to destroy the happiness of an innocent and helpless woman. He lent himself to a scheme, which, bad in its inception, is hardly redeemed from utter infamy by the great results it achieved for Protestantism in England. The Cardinal worshipped power, and in his endeavor to retain it, he sacrificed his innate sense of honor and justice. And what was his gain? A tenure of office while the proceedings of the divorce were pending; and when his efforts to hasten the decision of Campeggio and the Pope failed, he reaped, in his disgrace and fall, the legitimate reward of his obsequious wickedness.

Anne Boleyn learned his opposition to her marriage with Henry, and from that moment nursed her wrath against him, and through her influence with the King, brought to bear against the Cardinal the calumnies of the envious courtiers. The infatuation of Henry for the woman became such, that at last she alone controlled his decisions. When

this result obtained, Wolsey's fate was sealed.

Cardinals Campeggio and Wolsey were associated by the Pope as Legates to try the divorce. In the month of May, 1529, the Legative Court "was opened in the hall of the Black Friars' Convent, in London." It is a memorable event in English history, and as such merits a passing notice. The circumstances which occasioned it were in themselves apparently trivial; but, in its result, it exercised a most important influence in the affairs of England. It was the point of time from which the whole tenor of English history was to be changed. Little did Henry and the Legates, or any of those who thronged that court, foresee the consequences of a divorce. Little did they think that the unmanly persecution of Queen Catharine was to result, not alone in breaking the heart of that unfortunate lady, but in destroying the Papal power in England, and in alienating forever from the bosom of Rome the Anglican Church. It was a foul blot upon the manhood of English gentlemen, that they assisted the King in his dastardly project; but it was well for Protestantism and Liberty, to use the language of the poet—

"When love could teach a monarch to be wise,  
And Gospel light first dawned from Boleyn's eyes."

The court found Queen Catharine determined to assert and maintain her rights. She questioned their authority, and they pronounced her contumacious. It must have been a piteous scene, the opening of that Legislative Court! All the learning and wisdom of the kingdom arrayed against one weak woman. But nobly did the Queen assert her rights, and demand protection. The dauntless blood of her great mother, Isabella of Spain, mantled her cheek and strengthened her heart. The conscious dignity of virtue was hers; the thought of her descent from a long line of heroes nerved her courage, while she indignantly denied the authority of the Legates; and all the warmth, the deep, true affection of a loving woman's heart, gushed forth in one great burst of tenderness, when, throwing herself at the King's feet, she implored his protection. If Henry had possessed a spark of manly feeling, a sentiment of chivalrous regard

for the weaker sex, the solemn court, half-farce, half-tragedy, would have been dissolved, and honor would have reclaimed her long vacant seat in his heart. But Providence willed otherwise, and for the best.

From no point of view is Wolsey's conduct in this divorce reconcilable with his duty as a man, an administrator of justice, or a minister of religion. He knew the base motives of the King, and it was his duty, in every capacity, to have remonstrated against their indulgence. If, like Sir Thomas More, his great successor, he had preferred to give up office and power rather than assist in a proceeding he knew to be wrong, his death would have been cheered by those sublime reflections which accompanied that philosopher to the scaffold.

In July, 1529, the proofs in the suit were completed, and Henry urged an immediate decision. But Campeggio insisted upon submitting them to the Pope before the rendition of judgment. Wolsey's influence was vainly exerted to alter this decision of Campeggio.

At this time, open attacks were made upon the Cardinal. The power of Anne Boleyn over the King was brought to bear against the Chancellor. He stood between the ambition of her family and royal favor. The King was induced by degrees to separate himself from his favorite minister. His connection with the divorce was unfavorably represented to his sovereign. Henry was persuaded that Wolsey, while pretending to hasten it, covertly sought means to retard its progress. By degrees, the marks of royal favor were diminished. He seldom had audience with the King, and his opinion was no longer asked. Finally, on the 17th of October, 1529, the Great Seal was taken from him, and he was no longer Chancellor.

Two days before, he had opened the Michaelmas term of his Court with his usual splendor and display, although he knew his fall was near. When, a few weeks before, he had been refused audience with the King, in the words of the chronicler, "He wept like a woman, and wailed like a child;" but on this occasion of his last public appearance as Chancellor, he exerted all his resolution to preserve his dignity, and with Roman fortitude concealed from spectators the



terrible anguish that was breaking his heart.

An information was filed against him by the Attorney-General. He was obliged to surrender his palace of York Place, and to retire to Esher, a country-seat belonging to him. In November, 1529, articles of impeachment were preferred against him by a committee of the House of Lords. Criminal proceedings were not taken, however, as the Commons rejected the impeachment.

Not long before, he had resigned to the King Hampton Court, a palace built by the Cardinal, and famous, even in these days, for having been his residence.

He was now stripped of everything but his revenues as Archbishop, and a trifling sum from his Bishopric of Westminster. Finally he received an order to remove to his See of York, and proceeding thither he began to prepare for his installation. It was to take place on the 17th of November, 1530; but three days before the appointed time, his falling fortunes received their final blow, for, on the 14th of November, he was arrested for high treason, by the Earl of Northumberland, and sent forward to London. On the road he was attacked by sickness, and could proceed but slowly. On the 26th of November, terribly worn by his disease, he alighted at the Abbey of Leicester, addressing the Abbot, who came forth to greet him, with the prophetic words:

"Father Abbot, I am come to lay my weary bones among you."

He lingered here three days, and on the 29th of November, at eight o'clock in the morning, upon the very stroke of the hour he had long before predicted as that of his death, his spirit passed to God.

Such was the last of earth of Thomas Wolsey. Shakespeare has immortalized the circumstances of his fall and death. They are pregnant with instruction to all.

It has been said that, during the zenith of his power, Wolsey was England. In many points the remark is true. His diplomatism gave his country a prominence in European affairs which she had never before possessed; his love of learning developed the germ of a great educational system; his strong

will, and clear, comprehensive idea of justice, gave a new impulse to equitable jurisprudence, and his hate of sloth and ignorance dealt the death-blow of the conventual system.

While he possessed the ear of Henry, that turbulent monarch acted measurably from principle; "but," says Lingard of Wolsey, "the moment his influence was extinguished, the royal passions burst through every restraint, and by their caprice and violence alarmed his subjects, and astonished the other portions of Europe."

But in whatever degree an admirer of the great Cardinal may lament his fall, there can be seen in it that finger of Providence, which works in the disposition of human affairs. If Clement the Seventh had died in 1529, when sickness had brought him to the verge of death, Wolsey would have been Pope of Rome, Henry the Eighth would have lived and died a loyal subject of the Papal See, and the development of Protestantism in England would have been checked.

Many of the libels uttered against the Cardinal had their origin solely in the wounded pride of the nobles and higher ecclesiastics. The nobility were exasperated against Wolsey, because of his connection with the impeachment and conviction of the Duke of Buckingham. In that unfortunate affair, it is true that the Cardinal deviated from the path of justice; but the accusations urged against him came with bad grace from men who, with hypocritical tears in their eyes, pronounced Buckingham guilty of high treason.

But we do not urge this fact in exculpation of Wolsey. His clear and discriminating judgment, his education and habits of thought, placed him, in point of intellect, far above an ignorant and turbulent nobility, or a priesthood of such contracted views and limited knowledge as that of England in the sixteenth century.

Much obloquy has been affixed to the memory of Wolsey, because of his endeavor to obtain the popedom. But it had its origin in prejudiced minds. To render himself worthy, in the estimation of the electors of this great office, was a noble ambition. That effort we cannot reprehend. We perceive in his vigor-

ous habit of study, his constant endeavor to satisfy his royal master by an intense application to official duties, his prompt and decisive action as Prime Minister of the Realm, his unwearying industry in the performance of every public employment, a constant and unwavering determination to render himself the most prominent and acceptable candidate for the highest office in the Church of Rome. In all this, he did no more than fulfil a law of our nature. In such efforts can be found no cause of rebuke. They have their origin in one of the noblest principles of our development—the determination to succeed—the *will* to rise. But there is a dark side to this picture. To counterbalance the really noble efforts of a proper ambition, was a willingness to blind conscience in the service of the King, the connection with the impeachment and death of Buckingham, and the fatal assent to the divorce of Catharine.

But thus it too often is with our poor human nature. An ambition, noble in itself, is too often degraded by the very means it seeks to rise upon. Can we, then, while reprehending the course pursued by Wolsey to obtain the great object of his life, fail to drop the tear of pity over the misuse of those God-like faculties all men possess in some degree, and which all may equally degrade? Christian charity is the only panacea of our humanity.

We turn wearily from the men of England in that age, and find in Wolsey's character an oasis in an intellectual desert. We study reverentially his history, and mark with sorrow the points of his deflection from the right. We know that Henry was ungrateful, that the nobility was envious, that Anne Boleyn was a wretched woman, raising herself, on the unsubstantial foundation of others' ruin, to the throne, the guerdon of her shame and the pledge of her destruction; but we consider Wolsey's fate well-merited, and hardly regret that the hands which meted out his punishment rendered more poignant his sufferings.

Men have reproached him with displaying womanly weakness in his fall. For a time, he did give way to passionate sorrow; but we must remember that his was an imperious nature, loving power as life: and feeling the

sway of England snatched rudely from his grasp, the hope of the Papal tiara destroyed, his influence in European councils at an end, the whole fabric of long years of arduous toil demolished in a day, and for a wanton woman's love, can we wonder that the tempest swept wildly over his heart-strings. Should we not rather be amazed that he did not sink at once beneath its blasts?

But the consolations of religion were left him, and all his ambition and misdeeds we can pardon and forget, for those words of penitential sorrow: "Had I but served my God with half the zeal I served my king, He would not in mine age have left me naked to mine enemies."

There is a moral all may apply in the life and death of Thomas Wolsey; and Shakespeare has given it utterance:

"Oh! how wretched  
Is that poor man that hangs on princes' favors!  
There is betwixt the smile we would aspire to,  
That sweet aspect of princes and their ruin,  
More pangs and fears than wars and women have;  
And when he falls, he falls, like Lucifer,  
Never to hope again."

♦♦♦  
Chambers's Journal.

#### THE STORY OF A PIECE OF CHALK.

It is so long ago that I can hardly remember it. If the years which have elapsed since my birth were reckoned in millions, that number would not be too great. My first recollections are of a white, muddy sediment, many scores of feet in thickness, stretching along the bottom of a very deep sea. Of this oozy bed, I formed an inconsiderable part. The depth of sea-water which pressed down this stratum was so great that the light scarcely found its way through the green volume. Day and night, the billows tossed and heaved above me. I could hear the storm howl and the hurricane sweep over the surface of the sea, although they could not affect the bottom where I was lying. Before I woke to consciousness in my oozy condition, I had existed in quite another form. The constant beatings of the cretaceous sea against its rocky barriers, and the vast quantity of muddy matter poured into it by rivers, caused to be distributed through the sea-water a considerable quantity of mineral sediment. Of course, great though this quantity originally

was, when it was diffused throughout the sea, it appeared so small as not to affect the real transparency of the water. The presence of carbonate of lime (for such was a good portion of the mineral matter above mentioned) could only have been proved by chemical tests. It happened, however, that there were eyes sharp enough to detect it, although *human* eyes did not open on the world for myriads of ages afterward. Those to which I allude belonged to a set of animals so small that you could have put millions of them into a school-girl's thimble!

Each creature was a perfect animal, nevertheless. It had a soft, jelly-like substance, which developed itself into feelers, that took hold of prey even smaller than itself. This soft body was inclosed in a sort of shelly case, beautifully ornamented, and uniformly shaped. This case was manufactured either out of the carbonate of lime, or silica, which has already been mentioned as held in solution by the sea-water. Every cubic inch of water in all the vast ocean at whose bottom I was lying was alive with these animalcules, everlastingly at work separating the mineral matter. It was quite impossible to see these little workers that "out of water brought forth solid rock," and yet they were there. Their individual lifetime was very brief, rarely extending over a few hours. But their powers of reproduction were enormous, and thus they were always dying and generating. As they died, they began to sink slowly through the water. The sea was always full of their dead shells, which were gravitating toward the bottom, where they fell as lightly as the motes which float in the sunbeams drop upon the floor. Night and day, they were always alighting there, and forming a thin film. Century after century passed away, and still found these dead shells accumulating, until all the figures I have heard reckoned on the black-board near me—I am now used in a school-room for the purposes of arithmetic—would not together give any idea of their numbers, even if they were all stretched out in a row! You may think this is a bit of romancing, but it is not. A few days ago, a gentleman broke a piece off me, and after powdering it and washing it with

a fine camel-hair brush in distilled water (so as to make sure of his experiment), I heard him tell a friend that he could show him thousands upon thousands of fossil animalculic shells which he had obtained from this small piece!

I am composed of exactly the same ingredients. Although I am no bigger than a small orange, I can assure you there are scores of millions of fossil shells contained within my bulk. In fact, I am myself nothing more than a mass or congeries of the dead shells to which I before alluded. Every time the teacher makes a figure with me on the black-board, he leaves thereon thousands of fossil animalculæ. If you will wash the chalk as the above-mentioned gentleman did, you may see these minute fossils for yourself; though, it is true, you would need a powerful microscope to enable you to do so.

It was the gradual accumulation of these animalculic shells that formed the oozy mud at the bottom of the sea. The extent of this mud-bed was very great—not less than thousands of square miles in area. Notwithstanding the slowness of the deposition, and the infinitely minute creatures which almost wholly formed it, the accumulation went on until the mud had reached a vertical thickness of fifteen hundred feet! What must be the enormous number of shells contained in this mass, and the number of centuries occupied in elaborating it, I leave you to guess. The rate of deposition was very regular, and I have heard that along the bottom of the great ocean called the Atlantic there is actually now being formed a stratum very similar to that from which I was taken. Like it, also, it is formed principally by immense numbers of dead animalculum.

I lay along the bottom of the cretaceous sea for thousands of years, during which great changes took place in the oozy deposit, some of which I distinctly remember. I mentioned before that, besides carbonate of lime, there were diffused through the sea-water other minerals, among the rest one called *silica*, the basis of common sand. Well, a good proportion of the minute animals inhabiting my native sea used this mineral instead of lime, so that their shells were formed of flint. These, of course, fell to the bottom along with the others,

and were all mixed up together. By and by, a chemical change took place in the thick mud. It seems that the little grains or shells of silica have a tendency to separate from the lime, and to run together; consequently, the flinty little shells aggregated along the sea-bottom, and there formed what are now known as *flint-bands* and *nodules*. These layers of flint were formed at nearly regular intervals, the chemical changes being very uniform. I should also mention, that as the oozy bed increased in thickness, what with the weight of seawater and the overlying mud, the *lower* beds began to be compressed into a solid form. As soon as this took place, they passed into real *chalk*, of which I found myself a part.

I have a distinct recollection of the creatures that inhabited the sea whilst I was lying along the bottom. I am told there are nothing like them living in the seas of the present day. Even those which approach nearest in resemblance differ in some point or another. The most remarkable of these inhabitants of an extinct ocean were a series of large sponges, called by scientific men *Paramoudræ*, but better known in Norfolk (where I come from) as "Pot Stones." These were originally sponges which grew one within the other, like so many packed drinking-glasses, sometimes to the height of six or seven feet. Through the whole set, however, there was a connecting hollow, which is now filled with hard chalk, the rest being all pure flint. It is very remarkable how these sponges became transformed into their flinty condition. As sponges, they were full of what are called *spicules*—that is, flinty, needle-shaped crystals, which act the part of *vertebræ* to the sponge. You may find them in the sponges of the present day. When the "pot stones" existed in this state, as the sponges died and began to decompose, they served as nuclei to all the flinty particles of animalculic shells diffused through the mud. These replaced the decaying matter of the sponge little by little, until the original *Paramoudræ* were turned into "pot stones." That the flint was originally soft may be proved by the fact, that fossil shells are often found embedded in it. The other creatures I most distinctly remember are now found in a solid state

in the chalk, and are commonly known as "Fairy loaves" and "hearts." They belong to an extensive family still living, and known to the fishermen (who often dredge them from the bottom of the present sea) as "Sea-urchins," on account of their spiny covering. The existing sea-urchins crawl along the bottom by means of innumerable suckers. Many a time have the fossil fairy loaves thus crept over where I lay. The hearts were similarly covered with movable spines or bristles.

But the commonest objects I remember are those now often found in the chalk as well as the flint, and which are known as "Thunder-bolts." These fossils, however, are individually only part of the creature to which they originally belonged. They were the solid and terminal bones of a species of "cuttle-fish." After the latter had died, and lay embedded in the chalky mud, the soft and fleshy parts decomposed, and left only the harder portions to be preserved. Sometimes the *thorns*, which were attached to the long arms of these creatures, as well as the horny portion of the beak, are also found fossilized. During my time, the *Belemnites* (as these fossils are now called) swarmed the seas in millions; in fact, they were thorough scavengers, and devoured any garbage they came across—dead fish, rotting fairy loaves, etc., and even one another. Here and there, grouped in the hollows of the sea-bottom, lay nests of shells. They are commonly called "cockles," a generic term which fossil shells are always known by to those who have not made geology a study. Real *cockles*, however, had not then come into existence. There were a great many species of shells, and these abounded in every sheltered spot. Some of the fishes were covered with little enamel plates, instead of horny scales. Sharks also abounded in considerable numbers, and I have frequently been witness of the great havoc they made among the shoals of smaller fish. But by far the most gigantic sea-monster was a great marine lizard, fourteen or fifteen feet long, which had teeth implanted in its jaws like bayonets. I have seen its dark shadow pass over where I lay, and have beheld the fishes, and even the otherwise bold sharks, dart away in fear.



With one or two strokes of its formidable *paddles* (for it had these instead of fins), it could glide through the water with lightning speed. But even this terrible creature had to succumb to death, and its rotting carcase sunk among the oozy chalk, and there fell to pieces, and became fossilized.

Time would fail me to tell of *all* the creatures which lived in my native sea. I remember that, after long ages had passed away, tremors were again and again felt to shake the sea-bottom. It was evident that some earthquake action was at work over a considerable area. By and by, we found the water getting shallower, and that the light came through the waves more clearly. The sea-bottom was being upraised; and at length what had formerly been ocean, became an extended mud-flat. The sea was drained off, and covered land which had sunk as ours had risen; and thus the two changed places. The upheaval went on, and the chalk hardened into its present solid state, and became a land-surface.

Do not imagine that this upheaval was a sudden and violent process, as some have thought; on the contrary, it was exceedingly slow. The exact spot where I was born was at hundreds of yards depth of sea-water, and the upheaving process was probably not greater than at the rate of a few feet a century. From this you may form some idea of the time it took to lift me from my briny bed to the fresh air and hot sunshine. Meantime, whilst the chalk formation, of which I was an infinitesimal portion, was thus being upheaved, the sea was at work in other localities depositing strata similarly to the manner in which I had been originated. Not a single moment was idled away. The forces of Nature know no Sabbath—they must toil on from the creation to the final consummation of all things! The great work of the sea, ever since the waters were divided from the dry land, has been to lay the foundations of future continents, and even mountain-chains. Her own barriers have thus been erected by herself, and then as slowly frittered away in order to establish them elsewhere. Geologically speaking, a “new earth” is always being formed! The old one is gradually altered, particle by par-

ticle, just as the human body changes its physiological structure, and yet retains its own individuality.

When I did appear above the surface of the sea, it was to form part of an extensive chalky mud-flat. Far as the eye could see this monotonous landscape stretched away. Here and there, an arm of the sea extended, as if old Neptune were loath to quit his sway, and to see his recent territory possessed by his rival *Tellus*. The pasty mud hardened on the surface in the hot sunshine (for the latitude of what is now Great Britain then enjoyed a sub-tropical climate), and cracked into huge dikes, which the wear and tear of the atmosphere again filled up. The upheaval still proceeded, until at length, after century upon century had passed away, the solid chalk was lifted high enough above the waves to form a tolerably steep coast-line.

For a long time, the hardened, *new-born* chalk was perfectly bare. There was neither soil nor vegetation upon it. It extended in an undulating area, just as the sea-currents had carved it, for hundreds of miles. Wind and rain at length formed a light, chalky mould, which was rendered somewhat sandy by the admixture of flints that had been broken up and pounded into dust. Sea-birds, such as the *albatross*, lived in the adjoining sea, and for centuries the chalk surface served them as a refuge from the storm, and to build their nests upon. Their excrements, together with the light mould I have spoken of, laid the first foundations of the soils and subsoils which covered me up. Some of the birds left undigested seeds, brought from other lands, and these took root and flourished. The wind came laden with minute spores of moss and fern, and soon thick brakes and morasses clothed the marshy places with cheerful green. An occasional palm-nut was stranded upon the beach, where it grew and shortly afterwards bore fruit, that spread itself in huge palm forests over an area which, a few centuries before, had been nothing but an extensive and barren chalk-flat. In this manner a sub-tropical vegetation covered up the chalk of which I formed part. It has not taken me long to tell, in a general way, of the changes which were thus wrought, but it required thousands of years to produce

them. After the upheaval had continued for a long time, it suddenly ceased, and the chalky continent, with its wealth of virgin forests and innumerable inhabitants, remained at rest. But the ordinary physical laws of nature were in operation, just as they are now. I ought to have told you that the chalk continent extended from the west of Ireland, through Russia, as far as the coasts of what is now the Mediterranean Sea. It is also more than probable that there was a continuation of land across the Atlantic into America. Existing oceans, seas, lakes, and rivers had not then been formed. These are the results of subsequent processes, which, as may be imagined, took up scores of centuries to bring them about.

I remember starting with surprise, one morning, on seeing a *four-footed* creature near me, the like of which I had never beheld before. I had been used all my life long to marine creatures of various shapes and sizes; but now the time had come that I was to be introduced to a different set of acquaintances altogether. The best idea of the aboriginal forests which covered the chalk may be obtained by studying those of India. But at the time I am speaking of, forests equally great covered Norfolk, Suffolk, Cambridgeshire, Kent, Surrey, and a number of other localities. The creature I have just mentioned was an enormous *monkey*, which had strayed from its companions into my immediate neighborhood. (The geological period of which I am speaking is known as the *Eocene*.) Huge boa-constrictors hung on the trees for days, and only left them when urged by the sharp pangs of hunger; in the marshier places, crocodiles wallowed, and lay in wait for their prey; strange animals, allied to the present South American tapir, snorted about. An immense creature, called the *Dinotherium*, with semi-aquatic habits, used to bask in the marshes, and sleep for hours, with its tusks anchoring its huge head to the shore, and thus keeping it above the water and the mud. Many other genera and species of animals—so strange, that long Greek names alone give us any idea of their main features—lived upon our hardened surface. Flowers of tropical hue and color were rivalled in beauty and gorgeousness by

humming-birds and butterflies. The broad leaves of the banana stretched forth and mingled with the graceful fronds of the tree-fern. The bread-fruit-tree shed its rich store of food on the earth, and fed herds of *Hyracotheria* and *Palæotheria*. In sooth, the landscape was a scene of magnificent beauty. When the golden sunset lingered among the palm-groves, one could well have thought that the Lord indeed walked in the garden. But Man—who makes such a noise in the world now, and imagines that it has been made specially for him, and that therefore everything should be subservient to his wishes and gratifications—had not then made his appearance. And yet Nature, notwithstanding the absence of a human high-priest, did not the less daily offer up a hymn of praise to her adorable Creator.

Nothing earthly is stable; and geology is a science full of proof of this assertion. The Eocene age passed away; the *Meiocene* came; and, in turn, was replaced by the *Pleiocene*. The tropical conditions of which I have been speaking underwent a change, which was at first very gradual, and almost imperceptible. The tree-ferns and palms did not flourish as luxuriantly as they were wont; the cold winds blew more frequently, and the poor monkeys shivered and died. At length, finding the climate became colder instead of warmer, many of the creatures migrated to more southerly and congenial latitudes, whilst those unable to do so died out. The old forests grew thinner, and winter now showed he was unwilling to give place to almost perpetual summer. But, as if to compensate for the mischief which alteration of climate produced, other trees replaced the palm and the fern. Thickets of hazel and alder grew in marshy places, pines innumerable spread over the country; whilst the oak, ash, and elm made their appearance for the first time. Thus did the land gradually assume something like its present European appearance. I had before felt the ground shake with the heavy tramp of a monstrous large creature, quite different to any I had seen in bygone days. I had by this time grown used to changes, and was therefore more curious than alarmed at the new-comer. It was an elephant of the most gigantic size, much larger than any

living at the present time. It browsed luxuriantly upon the young shoots and fresh twigs, and found a hearty meal spread for it wherever it went. By and by, I was accustomed to see herds of elephants, and to hear them trumpet and snort loud enough to make the welkin ring again. The rivers which sluggishly meandered through the chalk-beds, had now become very broad and deep, and in these, hosts of rhinoceri and hippopotami wallowed and gurgled. The fights that sometimes took place among these creatures were fearful to behold. There was none to disturb them, except a savage and gigantic lion, with enormously sharp teeth and long claws; but this beast, the *Machairodus*, was the greatest enemy to the antelopes and deer that browsed on the adjacent plains.

The climate gradually became more rigorous than ever. In the interval of the existence of the forests which covered up myself and brethren, I am told that great and extensive physical changes went on elsewhere. In France, volcanoes had been actively at work, and great sheets of molten lava had been poured out by them, which had antedated Herculaneum in their destructiveness. Where London, Paris, and Vienna now stand, great fresh-water lakes, similar to those of North America, existed, and along their bottoms, series of fresh-water strata were deposited, upon which the foundations of these celebrated cities are now laid. In fact, all over the world, more or less, great changes had been going on. What is now the Pacific Ocean had been occupied by a great continent, which was afterward split up into the South Sea Islands.

In addition to the increasing cold, I had for some time imagined that the sea-level was no longer as steady as it had been. The dry land was gradually *sinking*, just as ages before it had been as gently upheaved. There could be no doubt about it; and I was alarmed at the apparent insecurity of the world into which I had been introduced. The ratio of the increase of cold was almost in proportion to the rate at which the dry land was sinking. To cut the matter short, it was only a question of time as to when the chalk continent would once more be sea-bottom. It happened

at last—we were dry land no longer, but a shallow sea. The cold was now intense, so intense that, for a long time back, the elephants and rhinoceri had been covered with long, woolly hair, to protect them from its rigor. Away on the mountain-tops the snow had accumulated, and sent forth long sheets of ice, which thrust their way toward the sea, where immense fragments broke off, and floated away as icebergs. The submergence still went on, until many hundreds of feet in depth of sea-water covered us. I looked around to discover any of the old marine creatures that had lived in the sea of the chalk period, where I was born, but not one could I behold. Everything was altered—the very shell-fish were those now living in arctic latitudes! The shallower portions of the sea-bottom were continually liable to be ploughed up by some stranding iceberg, which brought burdens of mud and boulders to topple over us. What dry land did remain was covered with a moving sheet of thick ice, which ground the rock-surface on which it rested into impalpable mud. This mud was carried away in prodigious quantities to the sea, where it was strewn along the bottom. There it formed those immense beds of *till* and brick earth which cover the whole area of Great Britain, more or less. This arctic sea, as I may term it, kept its place for ages, until several hundreds of feet of gravel, clay, and sand, had been deposited; then came an arrest to the submergence; and eventually, *another* upheaving process set in. When this terminated, and dry land once more appeared, the physical geography of the country assumed pretty much the appearance which now characterizes it. The clay and sand formed admirable subsoils; flowers spread over hill and dale, and the green grass carpeted the meadow and mountain side. The earth had recently been baptized in the ocean, and there prepared as a renewed world for a new comer. It was at this time that Man first appeared. His remains may be found mixed up with those of many extinct animals, and his primitive weapons of the chase are commingled with the gravel of the rivers on whose banks he lived. My own experience extends such a long way back, that it seems but as yesterday that Man was introduced. But

in that brief period, he has managed to alter the face of creation, and his race has progressed beyond that of all other species put together. I am now getting toward the end of my story, and must leave it to others to continue the history of this last created of animals, merely mentioning, by the way, that it was he who quarried me from the adjacent hill-side; and that it is to his children I am used as a humble means of instruction.

♦♦♦  
Cornhill Magazine.

#### THE EARTH A MAGNET.

THERE is a very prevalent but erroneous opinion that the magnetic needle points to the north. We remember well how we discovered in our boyhood that the needle does *not* point to the north, for the discovery was impressed upon us in a very unpleasant manner. We had purchased a pocket compass, and were very anxious—not, indeed, to test the instrument, since we placed implicit reliance upon its indications—but to make use of it as a guide across unknown regions. Not many miles from where we lived lay Cobham Wood, no very extensive forest certainly, but large enough to lose oneself in. Thither, accordingly, we proceeded with three schoolfellows. When we had lost ourselves, we gleefully called the compass into action, and made from the wood in a direction which we supposed would lead us home. We travelled on in full confidence in our pocket guide; at each turning we consulted it in an artistic manner, carefully poising it and waiting till its vibrations ceased. But when we had travelled some two or three miles without seeing any house or road that we recognized, matters assumed a less cheerful aspect. We were unwilling to compromise our dignity as “explorers” by asking the way—a proceeding which no precedent in the history of our favorite travellers allowed us to think of. But evening came on, and with it a summer thunder-storm; we were getting thoroughly tired out, and the *juvabit olim meminisse* with which we had been comforting ourselves began to lose its force. When at length we yielded, we learned that we had gone many miles out of our road, and we did not reach home till several hours after dark.

How it fared with our schoolfellows we know not, but a result overtook ourselves personally, for which there is no precedent, so far as we are aware, in the records of exploring expeditions. Also the offending compass was confiscated by justly indignant parents, so that for a long while the cause of our troubles was a mystery to us. We now know that instead of pointing due north the compass pointed more than 20° toward the west, or nearly to the quarter called by sailors north-north-west. No wonder, therefore, that we went astray when we followed a guide so untrustworthy.

The peculiarity that the magnetic needle does not, in general, point to the north, is the first of a series of peculiarities which we now propose briefly to describe. The irregularity is called by sailors the needle's *variation*, but the term more commonly used by scientific men is the *declination* of the needle. It was probably discovered a long time ago, for 800 years before our era the Chinese applied the magnet's directive force to guide them in journeying over the great Asiatic plains; and they must soon have detected so marked a peculiarity. Instead of a ship's compass they made use of a magnetic car, on the front of which a floating needle carried a small figure whose outstretched arm pointed southward. We have no record, however, of their discovery of the declination, and know only that they were acquainted with it in the twelfth century. The declination was discovered, independently, by European observers in the thirteenth century.

As we travel from place to place the declination of the needle is found to vary; Christopher Columbus was the first to detect this. He discovered it on the 13th of September, 1492, during his first voyage, and when he was six hundred miles from Ferro, the most westerly of the Canary Islands. He found that the declination, which was toward the east in Europe, passed to the west, and increased continually as he travelled westward.

But here we see the first trace of a yet more singular peculiarity. We have said that at present the declination is toward the west in Europe. In Columbus' time it was toward the east. Thus we learn that the declination varies



with the progress of time, as well as with change of place.

The Genius of modern science is a weighing and a measuring one. Men are not satisfied now-a-days with knowing that a peculiarity exists; they seek to determine its extent, how far it is variable—whether from time to time or from place to place, and so on. Now the results of such inquiries applied to the magnetic declination have proved exceedingly interesting.

We find first, that the world may be divided into two unequal portions, over one of which the needle has a westerly, and over the other an easterly, declination. Along the boundary line, of course, the needle points due north. England is situated in the region of westerly magnets. This region includes all Europe, except the north-eastern parts of Russia; Turkey, Arabia, and the whole of Africa; the greater part of the Indian Ocean, and the western parts of Australia; nearly the whole of the Atlantic Ocean; Greenland, the eastern parts of Canada, and a small slice from the north-eastern part of Brazil. All these form one region of westerly declination; but singularly enough, there lies in the very heart of the remaining and larger region of easterly magnets, an oval space of a contrary character. This space includes the Japanese Islands, Manchouria, and the eastern parts of China. It is very noteworthy also, that in the westerly region the declination is much greater than the easterly. Over the whole of Asia, for instance, the needle points almost due north. On the contrary, in the north of Greenland and of Baffin's Bay, the magnetic needle points due west, while still further to the north (a little westerly) we find the needle pointing with its north end directly toward the south.

In the presence of these peculiarities it would be pleasant to speculate. We might imagine the existence of powerfully magnetic *veins* in the earth's solid mass, coercing the magnetic needle from a full obedience to the true polar summits. Or the comparative effects of oceans and of continents might be called into play. But unfortunately for all this we have to reconcile views founded on *fixed* relations presented by the earth,

with the process of *change* indicated above. Let us consider the declination in England alone.

In the fifteenth century there was an easterly declination. This gradually diminished, so that in about the year 1657 the needle pointed due north. After this the needle pointed toward the west, and continually more and more, so that scientific men, having had experience only of a continual shifting of the needle in one direction, began to form the opinion that this change would continue, so that the needle would pass, through north-west and west, to the south. In fact, it was imagined that the motion of the needle would resemble that of the hands of a watch, only in a reversed direction. But before long observant men detected a gradual diminution in the needle's westerly motion. Arago, the distinguished French astronomer and physicist, was the first (we believe) to point out that "the progressive movement of the magnetic needle toward the west appeared to have become continually slower of late years" (he wrote in 1814), "which seemed to indicate that after some little time longer it might become retrograde." Three years later, namely on the 10th of February, 1817, Arago asserted definitively that the retrograde movement of the magnetic needle had commenced to be perceptible. Colonel Beaufoy at first oppugned Arago's conclusion, for he found from observations made in London, during the years 1817-1819, that the westerly motion still continued. But he had omitted to take notice of one very simple fact, viz. that London and Paris are two different places. A few years later and the retrograde motion became perceptible at London also, and it has now been established by the observations of forty years. It appears from a careful comparison of Beaufoy's observations that the needle reached the limit of its western digression (at Greenwich) in March, 1819, at which time the declination was very nearly  $25^{\circ}$ . In Paris, on the contrary, the needle had reached its greatest western digression (about  $22\frac{1}{2}^{\circ}$ ) in 1814. It is rather singular that although at Paris the retrograde motion thus presented itself five years earlier than in London, the needle pointed due north at Paris six

years later than in London, viz. in 1663. Perhaps the greater amplitude of the needle's London digression may explain this peculiarity.

"It was already sufficiently difficult," says Arago, "to imagine what could be the kind of change in the constitution of the globe, which could act during one hundred and fifty-three years, in gradually transferring the direction of the magnetic needle from due north to  $23^{\circ}$  west of north. We see that it is now necessary to explain, moreover, how it has happened that this gradual change has ceased, and has given place to a return toward the preceding state of the globe." "How is it," he pertinently asks, "that the directive action of the globe, which clearly must result from the action of molecules of which the globe is composed, can be thus variable, while the number, position, and temperature of these molecules, and, as far as we know, all their other physical properties, remain constant?"

But we have considered only a single region of the earth's surface. Arago's opinion will seem still more just when we examine the change which has taken place in what we may term the "magnetic aspect" of the whole globe. The line which separates the region of westerly magnets from the region of easterly magnets, now runs, as we have said, across Canada and eastern Brazil in one hemisphere, and across Russia, Asiatic Turkey, the Indian Ocean, and West Australia in the other; besides having an outlying oval to the east of the Asiatic Continent. Now these lines have swept round a part of the globe's circuit in a most singular manner since 1600. They have varied alike in direction and complexity. The Siberian oval, now distinct, was, in 1787, merely a loop of the eastern line of no declination. The oval appears now to be continually diminishing, and will one day probably disappear.

We find here presented to us a phenomenon as mysterious, as astonishing, and as worthy of careful study as any embraced in the wide domains of science. But other peculiarities await our notice.

If a magnetic needle of suitable length be carefully poised on a fine point, or, better, be suspended from a silk thread without torsion, it will be found to ex-

hibit each day two small but clearly perceptible oscillations. M. Arago, from a careful series of observations, deduced the following results:—

At about eleven at night, the north end of the needle begins to move from west to east, and having reached its greatest easterly excursion at about a quarter past eight in the morning, returns towards the west to attain its greatest westerly excursion at a quarter past one. It then moves again to the east, and having reached its greatest easterly excursion at half past eight in the evening, returns to the west, and attains its greatest westerly excursion at eleven, as at starting.

Of course, these excursions take place on either side of the mean position of the needle, and as the excursions are small, never exceeding the fifth part of a degree, while the mean position of the needle lies some  $20^{\circ}$  to the west of north, it is clear that the excursions are only nominally eastern and western, the needle pointing, throughout, far to the west.

Now if we remember that the north end of the needle is that farthest from the sun, it will be easy to trace in M. Arago's results a sort of effort on the part of the needle to turn toward the sun,—not merely when that luminary is above the horizon, but during his nocturnal path also.

We are prepared, therefore, to expect that a variation having an annual period shall appear, on a close observation of our suspended needle. Such a variation has been long since recognized. It is found that in the summer of both hemispheres, the daily variation is exaggerated, while in winter it is diminished.

But besides the divergence of a magnetized needle from the north pole, there is a divergence from the horizontal position, which must now claim our attention. If a non-magnetic needle be carefully suspended so as to rest horizontally, and be then magnetized, it will be found no longer to preserve that position. The northern end *dips* very sensibly. This happens in our hemisphere. In the southern it is the southern end which dips. It is clear, therefore, that if we travel from one hemisphere to the other we must find the northern dip of the needle gradually diminishing till at

some point near the equator the needle is horizontal, and as we pass thence to southern regions a gradually increasing southern inclination is presented. This has been found to be the case, and the position of the line along which there is no inclination (called the *magnetic equator*) has been traced around the globe. It is not coincident with the earth's equator, but crosses that circle at an angle of twelve degrees, passing from north to south of the equator in long.  $3^{\circ}$  west of Greenwich, and from south to north in long.  $187^{\circ}$  east of Greenwich. The form of the line is not exactly that of a great circle, but presents here and there (and especially where it crosses the Atlantic) perceptible excursions from such a figure.

At two points on the earth's globe the needle will rest in a vertical position. These are the magnetic poles of the earth. The northern magnetic pole was reached by Sir J. G. Ross, and lies in  $70^{\circ}$  N. lat., and  $263^{\circ}$  E. long., that is, to the north of the American continent, and not very far from Boothia Gulf. One of the objects with which Ross set out on his celebrated expedition to the Antarctic Seas was the discovery if possible of the southern magnetic pole. In this he was not successful. Twice he was in hopes of attaining his object, but each time he was stopped by a barrier of land. He approached so near, however, to the pole, that the needle was inclined at an angle of nearly ninety degrees to the horizon, and he was able to assign to the southern pole a position in  $75^{\circ}$  S. lat.,  $154^{\circ}$  E. long. It is not probable, we should imagine, that either pole is fixed, since we shall now see that the inclination, like the declination of the magnetic needle, is variable from time to time, as well as from place to place; and in particular, the magnetic equator is apparently subjected to a slow but uniform process of change.

Arago tells us that the inclination of the needle at Paris has been observed to diminish year by year since 1671. At that time the inclination was no less than  $75^{\circ}$ ; in other words, the needle was inclined only  $15^{\circ}$  to the vertical. In 1791 the inclination was less than  $71^{\circ}$ . In 1831 it was less than  $68^{\circ}$ . In like manner the inclination at London has been observed to diminish, from  $72^{\circ}$

in 1786 to  $70^{\circ}$  in 1804, and thence to  $68^{\circ}$  at the present time.

It might be anticipated from such changes as these, that the position of the magnetic equator would be found to be changing. Nay, we can even guess in which way it must be changing. For, since the inclination is diminishing at London and Paris, the magnetic equator must be approaching these places, and this (in the present position of the curve) can only happen by a gradual shifting of the magnetic equator from east to west along the true equator. This motion has been found to be really taking place. It is supposed that the movement is accompanied by a change of form; but more observations are necessary to establish this interesting point.

Can it be doubted that while these changes are taking place, the magnetic poles also are slowly shifting round the true pole? Must not the northern pole, for instance, be further from Paris now that the needle is inclined more than  $23^{\circ}$  from the vertical, than in 1671, when the inclination was only  $15^{\circ}$ . It appears obvious that this must be so, and we deduce the interesting conclusion that each of the magnetic poles is rotating around the earth's axis.

But there is another peculiarity about the needle which is as noteworthy as any of those we have spoken about. We refer to the intensity of the magnetic action, the energy with which the needle seeks its position of rest. This is not only variable from place to place, but from time to time, and is further subject to sudden changes of a very singular character.

It might be expected that where the dip is greater, the directive energy of the magnet would be proportionably great. And this is found to be approximately the case. Accordingly the magnetic equator is very nearly coincident with the "equator of least intensity," but not exactly. As we approach the magnetic poles we find a more considerable divergence, so that instead of there being a northern pole of greatest intensity nearly coincident with the northern magnetic pole, which we have seen lies to the north of the American continent, there are *two* northern poles, one in Siberia nearly at the point where the river Lena

crosses the Arctic circle, the other not so far to the north—only a few degrees north, in fact, of Lake Superior. In the south, in like manner, there are also two poles, one on the Antarctic circle, about  $130^{\circ}$  E. long., in Adelie Island, the other not yet precisely determined, but supposed to lie on about the 240th degree of longitude, and south of the Antarctic circle. Singularly enough there is a line of lower intensity running right round the earth along the valleys of the two great oceans, "passing through Behring's Straits, and bisecting the Pacific on one side of the globe, and passing out of the Arctic Sea by Spitzbergen and down the Atlantic on the other."

Colonel Sabine discovered that the intensity of the magnetic action varies during the course of the year. It is greatest in December and January in both hemispheres. If the intensity had been greatest in winter one would have been disposed to have assigned seasonal variation of temperature as the cause of the change. But as the epoch is the same for both hemispheres we must seek another cause. Is there any astronomical element which seems to correspond with the law discovered by Sabine? There is one very important element. The position of the perihelion of the earth's orbit is such that the earth is nearest to the sun on about the 31st of December or the 1st of January. There seems nothing rashly speculative, then, in concluding that the sun exercises a magnetic influence on the earth, varying according to the distance of the earth from the sun. Nay, Sabine's results seem to point very distinctly to the law of variation. For, although the number of observations is not as yet very great, and the extreme delicacy of the variation renders the determination of its amount very difficult, enough has been done to show that in all probability the sun's influence varies according to the same law as gravity—that is, inversely as the square of the distance.

That the sun, the source of light and heat, and the great gravitating centre of the solar system, should exercise a magnetic influence upon the earth, and that this influence should vary according to the same law as gravity, or as the distribution of light and heat, will not ap-

pear perhaps very surprising. But the discovery by Sabine that *the moon* exercises a distinctly traceable effect upon the magnetic needle seems to us a very remarkable one. We receive very little light from the moon, much less (in comparison with the sun's light) than most persons would suppose, and we get absolutely no perceptible heat from her. Therefore it would seem rather to the influence of mass and proximity that the magnetic disturbances caused by the moon must be ascribed. But if the moon exercises an influence in this way, why should not the planets? We shall see that there is evidence of some such influence being exerted by these bodies.

More mysterious if possible than any of the facts we have discussed is the phenomenon of *magnetic storms*. The needle has been exhibiting for several weeks the most perfect uniformity of oscillation. Day after day the careful microscopic observation of the needle's progress, has revealed a steady swaying to and fro, such as may be seen in the masts of a stately ship at anchor on the scarce-heaving breast of ocean. Suddenly a change is noted; irregular jerking movements are perceptible, totally distinct from the regular periodic oscillations. A magnetic storm is in progress. But where is the centre of disturbance, and what are the limits of the storm? The answer is remarkable. If the jerking movements observed in places spread over very large regions of the earth—and in some well-authenticated cases over the whole earth—be compared with the local time, it is found that (allowance being made for difference of longitude) *they occur precisely at the same instant*. The magnetic vibrations thrill in one moment through the whole frame of our earth.

But a very singular circumstance is observed to characterize these magnetic storms. They are nearly always observed to be accompanied by the exhibition of the aurora in high latitudes, northern and southern. Probably they never happen without such a display; but numbers of auroras escape our notice. The converse proposition, however, *has* been established as an universal one. No great display of the aurora ever occurs without a strongly marked magnetic storm.



Magnetic storms sometimes last for several hours or even days.

Remembering the influence which the sun has been found to exercise upon the magnetic needle, the question will naturally arise, has the sun anything to do with magnetic storms? We have clear evidence that he has.

On the 1st of September, 1859, Messrs. Carrington and Hodgson were observing the sun, one at Oxford and the other in London. Their scrutiny was directed to certain large spots which, at that time, marked the sun's face. Suddenly, a bright light was seen by each observer to break out on the sun's surface, and to travel, slowly in appearance, but in reality at the rate of about 7,000 miles in a minute, across a part of the solar disk. Now it was found afterward that the self-registering magnetic instruments at Kew had made at that very instant a strongly marked jerk. It was learned that at that moment a magnetic storm prevailed at the West Indies, in South America, and in Australia. The signalmen in the telegraph stations at Washington and Philadelphia received strong electric shocks; the pen of Bain's telegraph was followed by a flame of fire; and in Norway the telegraphic machinery was set on fire. At night great auroras were seen in both hemispheres. It is impossible not to connect these startling magnetic indications with the remarkable appearance observed upon the sun's disk.

But there is other evidence. Magnetic storms prevail more commonly in some years than in others. In those years in which they prevail most frequently, it is found that the ordinary oscillations of the magnetic needle are more extensive than usual. Now when these peculiarities had been noticed for many years, it was found that there was an alternate and systematic increase and diminution in the intensity of magnetic action, and that the period of the variation was about eleven years. But at the same time a diligent observer had been recording the appearance of the sun's face from day to day and from year to year. He had found that the solar spots are in some years more freely displayed than in others. And he had determined the period in which the spots are successively presented with

maximum frequency to be about eleven years. On a comparison of the two sets of observations it was found (and has now been placed beyond a doubt by many years of continued observation) that magnetic perturbations are most energetic when the sun is most spotted, and *vice versa*.

For so remarkable a phenomenon as this none but a cosmical cause can suffice. We can neither say that the spots cause the magnetic storms nor that the magnetic storms cause the spots. We must seek for a cause producing at once both sets of phenomena. There is as yet no certainty in this matter, but it seems as if philosophers would soon be able to trace in the disturbing action of the planets upon the solar atmosphere the cause as well of the marked period of eleven years as of other less distinctly marked periods which a diligent observation of solar phenomena is beginning to educe.

♦ ♦ ♦  
Macmillan.

#### OF NATURE AND HUMAN NATURE.

BY ROBERT HAYNES CAVE, M.A.

THERE is a story somewhere told of a very young traveller, who started on the Grand Tour with the laudable intention, common to young travellers in general, of recording daily the impressions of his journey. Armed with notebook and pencil and the other *impedimenta* of the tourist, after a somewhat stormy passage across the Channel, he arrived late at night at the good town of Havre. He was at once pounced upon by a drunken commissionaire, and hurried off to a hotel in the town, where a chambermaid with locks of more than golden hue lighted him to his room. Eager to carry into effect the good intentions with which he started, our traveller hastily jots down in his diary the first impressions of a foreign land in these laconic terms: "The men of Normandy all drunkards; the women all have red hair." The story may pass as a satire upon the folly of hasty generalizations; of deducing general laws from a few particular instances, selected without care, and accepted without examination. But, although this may be a glaring example, still the habit itself is one to which we are all more or less

given. It saves so much trouble, and requires so little thought. And of all the hasty and false results we reach by this method, perhaps the commonest and most untrue are those with respect to the ways of life, the fortunes, the pursuits, and the happiness of our neighbors. Upon these subjects most people are never timid of generalizing. And, when their information is scanty, as it necessarily must often be, of course they arrive at very false and ridiculous conclusions.

To give an instance. The old contrast between the intelligence of town and country people is still maintained by some hasty writers, who generalize upon insufficient data. Now, there is no question that the general run of townspeople are sharper than the average country bumpkin. Men's wits are naturally sharpened by rubbing against each other. But the fallacy lies in supposing that the sharpened wits of townsfolk find a more intellectual work to do than the blunter wits of those who dwell in country places. Take for instance the talk which goes on amongst middle-class people over the dinner-table or tea-table in town and country. Now, no doubt, bucolic conversation is very trying to your town-bred man. But then, if he be wise, he will try and take an interest in country affairs, if among country people he must needs be thrown. "Sir," said Johnson to Boswell, listening *erectis auribus*, "if I had to live in the country, I should talk about bullocks." And, on the other hand, I do not know that the table-talk of your average townsman is at all of a more intellectual cast. It consists mainly, so far as my experience goes, of gossip—of newspaper gossip, perhaps, of gossip which has a wider latitude of subjects to exercise itself upon, but which is gossip still, inasmuch as it deals with things done or doing, rather than with abstract questions or first principles. Undoubtedly civilization has an emasculating effect upon the common run of minds. Man cannot live by bread alone. But he is learning to live by newspapers—by printed sheets which carry news. Now we respect the ideas of the ancients, because they had time to think; whereas facts flow in so fast upon the modern mind that it has no leisure to classify

them, much less to reason upon the data they afford.

In truth, the wisdom or unwisdom respectively of dwellers in town and country is a thing you cannot generalize upon. Wise men, intellectual men, men who can see an inch beyond their noses, are alike rare and few, whether in country or town. But wherever they dwell, they do not owe their brains to their place of habitation. To live in a Bæotian clay soil will not make them fools; as indeed a residence at Athens itself cannot turn a fool into a philosopher. When you have said that talent naturally gravitates toward the towns, you have said as much as the subject will admit of in the way of generalization. And, indeed, I suppose that the towns in time mean to absorb the greater part of the population of England. It was so in the Middle Ages. Men gathered themselves into towns for security. And it seems likely to be the case in a few years with this or the next generation. The towns are draining the country of its life-blood, since men have begun again to gather themselves into towns for commerce.

And withal, I suppose there was never an age in which a more genuine enthusiasm was felt and manifested by all classes for country pursuits. I do not mean merely that Englishmen are more eager than ever after country sports. But the whole tendency of the modern English mind seems to be toward naturalism. Our best art is naturalistic. This century has seen the creation of a school of water-color painting whose aim is the delineation of realistic landscape. And natural history seems likely to become the favorite pursuit of our boys and girls, since the study of it has been taken up with enthusiasm by clever men who are also popular writers.

And the frame of mind which impels men to the study of natural history is one which can be very easily understood. Undoubtedly the proper and the natural study of mankind is man. There can be no such subject of interest for the human mind as that which is afforded by the hopes, the fears, the interests, the habits, the progress or retrogression of the human race. Whether regarded in the light of history, or politics, or religion, or ethics, or metaphysics, the

*humani nihil alienum* is a touch of nature which will always wring plaudits from pit, gallery, and boxes,—from all classes and conditions of men. And at first sight it does seem a monstrous thing, or the mark of a very little mind, to quit the study of men—of a man, look you, the heir of all ages: “so noble in reason, so infinite in faculties, in form and moving so express and admirable, in action so like an angel, in apprehension so like a God!” to quit, I say, the study of man, that one may employ oneself in studying an oyster or a shrimp. But the explanation of this is not difficult to find. The young enthusiast of human nature, fresh from the study of history and philosophy, tries to apply what he has learnt in books to the living subject, man. He starts with a generous enthusiasm of humanity; he enters upon a profession; he mixes with men. But he is brought to a sudden pause by the dead weight of practical experience. Like a young horse starting with his first load, instead of moving onward with a slow and steady pull, he attempts a rush: the dead weight checks him, the collar galls him, and he becomes for the time a jibber. To drop metaphor, there probably comes a time in the experience of most men when the study of human nature, of their fellow-man, his pursuits, his aims, his hopes—a study which they entered upon with such avidity at first—becomes distasteful to them. Practically, they find him to be a meaner being, occupying a lower place in the scale of creation, than they had thought. As their knowledge of the world widens, they find that some one or two men whom they had looked up to as their guides and teachers are not perfect or infallible. They find out in them that weaker side of humanity in which all men share. And so, from being hero-worshippers, they become for a time misanthropists. The fact is, they have probed just deep enough to find the devil in man, but they have not probed deep enough to find the angel.

And the worst of it is that the devil they get at in most modern men is such a poor devil after all, deteriorated, says the sneering philosopher, by much intercourse with man; who does not seem to know how to sin upon a grand scale, but is a compound of meanness and

petty shifts—not Milton’s devil, but rather Göthe’s: a sneering, shifty Mephistophelian fiend, and not the primeval Satan at all.

And so, disgusted for a time with human kind, they take refuge with nature. “Nature,” says our disappointed enthusiast, with a sneer upon his lip, and a scowl over his shoulder at poor regardless humanity, “never did betray the heart that loved her.” And in the study of nature it is possible for all men to rest—for a time. So the student becomes a sketcher, a geologist, a botanist, a chemist, or what not: and he is absorbed by his hobby, and happy. And indeed, my fellow-mortal, what happiness in a quiet undemonstrative way is greater than his who has lately mounted a hobby whose vices or unsoundness he has had no time to find out, and so goes prancing along the road satisfied with himself, satisfied with his cob, and regardless of all lookers-on? But then, as a rule, a man finds out after a time that this will not do. He can’t go on for ever riding his hobby horse, *et totus in illis*. The world’s work must be done, and the world’s work cannot be taken up and put down as a *parergon*. The study of natural history may be a delightful and engrossing pursuit. But there is world’s work to be taken in hand and finished—it must be *done* by some one. Men must be governed, taught, disciplined, warned, punished, and physicked. And to do this well, nay, even to do it at all, the *caput mortuum*, man, must be studied. And although dissection may not be at first a pleasant pursuit, but rather repulsive, still even dissections engross the mind, and whatever does that, after a time, pleases.

It may seem a strange thing to the reflective mind, that men in general should set such store by the memory of certain of their fellows, who have worked, not for them, but simply in the interests of nature. What is the charm, for instance, of White’s “Selborne?” White himself we take to be a commonplace person; shall we say even a somewhat heavy man? He has no high ideal of duty, this parson, or professional soul doctor, who dwells in the little Hampshire village. The spiritual eternities which surround him do not seem to appal

—nay, even to make him sad—scarcely, in fact, interest him at all. So many souls, eternal existences, battling for weal or woe, pass by his gates at sunrise, going forth to their work and to their labor till the evening. And he notes down in his diaries as matters of primal importance, that the tortoise in his garden has emerged from its winter's sleep, and that the bantam hen has begun to incubate. And Gilbert White's name is a household word even yet. He is, in fact, simply a good specimen of a man, happy and innocent, absorbed in his quiet country pursuits. Verily, innocent happiness must be a plant of rare growth amongst us, that we should prize it at such a rate as this.

There are a few happy souls indeed to whom nature and the study of nature becomes the "be all and end all" of existence. With no Nemesis of neglected duty behind them—for this, they feel before high heaven and in the sight of man, is their duty—they go through the world as though it were another Garden of Eden, which indeed to them it is. Living creatures, first seen by their eye, come to them to be named; and they hear the voice of the Lord God walking in the cool of the day. But then it was never intended that earth should have many of these men. One or two Gilbert Whites at a time are as many as the world generally produces, and, indeed, as many as it generally needs. For to most of us, under a solemn guise, and with stately mien, comes Madam Duty, and, laying finger upon lip, she saith, "Cease, trifler, from these pleasant pursuits. Leave moor and forest and mountain-side and river-bank. Go out into the highways of life, where human kind do congregate, even amongst the stench and cesspools of humanity, if needs must, and there find your work of love, and your reward of conquest. Away with that butterfly's wing of feathered mail from the field of the microscope; and, if thou must needs spy into nature's secret, let it be rather into human nature, and for the welfare of human kind. Leave the insect of a day, and at least, as an immortal, study the ways of the immortals." So speaks Madam Duty, and if she saith truth or no, who shall tell?

Chambers's Journal.

#### TROPICAL SCENERY.

AN extraordinary amount and variety of natural beauty distinguishes that volcanic offspring of the Indian Ocean, which we are in the unaccountable habit of calling *the Mauritius*, an error into which no reader of Mr. Boyle's pleasant book must ever again fall.\* The climate is so delightful, that one does not mind an incidental earthquake, or an occasional tornado; but it takes a European some time to get accustomed to it. The mornings are cool, the nights are balmy and refreshing, the twilights brief but wonderfully beautiful, far surpassing any which Europe beholds. Summer is perpetual. Few trees shed their leaves so completely all at once, as to be quite bare. One sort of brilliant plant rapidly succeeds the last; many flower twice or oftener in the twelve months. The palms are all the year round putting forth new branches, and as the young one unfolds itself to tower over the others, the underneath one of all fades, and soon falls. The air is so clear, so sweet, so fresh, that even the abnormally uncleanly habits of the inhabitants of Port Louis, and condition of the town, cannot render it pestilential; and the beautiful indigenous productions of the country, enriching the landscape with unsurpassed treasures of form and coloring, are supplemented by exotic importations which find a congenial home in the favored soil and the paradisaical temperature. The "natives," a wonderful mixture of races, known to the English and French colonists generically as "Malabars," are not a "bad lot" in the main; though they have one horrible characteristic sufficient to render the most beautiful country on earth unbearable to live in—they are excessively cruel to animals. They have much of the negro jollity and inquisitiveness, and are entirely indifferent to truth. The pure negro element is rapidly dying out of the population, which Mr. Boyle regards as a fortunate circumstance, the Asiatics being infinitely better as laborers.

All the country presents the characteristics of the out-of-door life which is led there: the houses are prim, tasteless, half-

\* *Far Away; or Sketches of Scenery and Society in Mauritius.* By Charles John Boyle. London: Chapman & Hall.



furnished, the planters' cottages mere sheds, as is not unnatural where the only use ever made of a dwelling is to eat and sleep in it. The religions of the "native" populations are as mixed and as motley as their origin and their costumes. The Hindoo population is sunk in the lowest depths of the very grossest idolatry; it must be "piled up" almost out of sight, for Mr. Boyle calls it "gross even for Hindoos." It is not surprising to hear that conversion to Christianity goes on but slowly, and is not of a particularly satisfactory kind. The most remarkable demonstration of faith is a festival which proves how spurious the Christianity is these people profess. This fête is Mohammedan in its origin, and is in fact celebrated privately by the Mussulman sect, who look on contemptuously at the "Christian" usurpation. It is called the "Yam-seh," which is supposed to be a corruption of the cry of lamentation and wailing over Hosein; and is in fact the Carnival of Mauritius, more grotesque, meaningless, and noisy than such exhibitions elsewhere, but not without the attraction of a strange fanaticism, exuberant gayety, and the beauty of vivid coloring, abundant light, incessant movement, and glorious weather.

There are two great sights to be seen in Mauritius, and each possesses, apart from its intrinsic interest, that of enabling the beholder to enjoy to the fullest extent the lavish and enchanting beauty of the country. One is the whole process of sugar-making; the other is the "Chasse au Cerf," which upsets our ideas very oddly, for it begins on the 15th of May and ends on the 31st of August. The chasse is conducted strictly on the French system, and that at which Mr. Boyle "assisted" started from the Hangar, thus described: "The Hangar I found to be on a larger scale than I had expected; indeed, in aspect, it is quite a little village. It stands on a cleared space, the forest creeping up close on all four sides. A large flower-bed, with a single palm here and there, and a clump of bananas, took somewhat from its otherwise wild look. A long building to the right, the *salle à manger*; close to this a circular one, the *rotonde*, for the company while waiting for dinner. Beyond this stands the *abattoir*, furnished with dressers, whereon to cut up the slaughtered game—in-

numerable large hooks, for hanging it, studding the rafters. Round these, several detached buildings are grouped, a host of small cases à deux chambres—a complete camp, in short, into which the guests are distributed by twos and twos as they arrive; and last, not least, the kitchens, pantries, larders, store-rooms, and so forth." From this woodland dwelling, in such weather as the first day of the world's existence might have witnessed, the chasse set forth, and through *what* a scene!

First came a dark intricate forest, to be threaded in single file, by a path now winding upward and across level ground; now downward, and over greensward; by streams, crossed by rugged trunks of fallen trees, now sluggish and clear, anon brisk and brawling. Suddenly the party find themselves in a grove of the Traveller's Tree (*Urania speciosa*), a marvellous specimen of vegetation, and this seen alone in its grandeur, forming one vast thicket, marvellously imposing. "Thousands were growing vigorously, hundreds have fallen over and against each other, many leaned forward, broken and tattered, while others measured the ground, and were rotting upon it, in huge disordered heaps of stems and foliage. Our road was the most curious feature of all. It was regularly sliced through, like a narrow cutting of a cliff on a railroad. We passed through impenetrable walls of gigantic interlaced leaves, pulpy-looking succulent trunks, the outer side regularly shaven clean and flat. No part of the tree hung or bent forward, none of the broad leaves waved overhead; the path was hewed solidly out of them. From all this every now and then we came suddenly out upon an open glade, across which the sun darted its broad golden streaks, then drew them in again. A mass of black clouds seemed to be still struggling to imprison it. Mountains backed the landscape, the higher ridge gloomily veiled in mist. Once for a foreground we came upon a herd of deer browsing; up went their antlers quivering, as our steps disturbed them, and they bounded away!" Then came a sudden change of landscape; the Traveller's Tree disappeared, the party crossed another stream, and were enclosed in a wilderness of the stern black jamrose. But the dark bounds were more

than modified, they were rendered beautiful by long ranks of the wild citron-tree, rising to a height of twenty feet, bearing rich loads of their burnished golden fruit, pendent against masses of polished leaves of vivid green. Again a stream, broader, tamer this time, and a wide cleared country is reached, where the fern grows high, and the grass is rank and long—where there are brakes, but no brambles, and thickets of wild raspberry, a plant delightful to the eye, with its hirsute, prickly, vine-shaped leaves, and scarlet berries with a most refreshing acid, which runs riot through every wood in the island. Here the business of the chasse began; but the beauty of the scene had more charm for Mr. Boyle, and he eagerly studied every detail of the landscape around, as he kept his position, close to a singular object. This was a dead tree, quite branchless, tall and straight, standing quite solitary in the open, and surmounted by something which looked like a white, solid, cinderlike sponge, but which really was a nest of the mercilessly destructive white-ant. Just above where this little world of wonderful insect-life clung, sat a bright green parrot, drying and pluming himself, and fluttering his feathers, on which the sun glistened. In face was a thicket of dark jamrose, behind a ravine choking with lavish and gigantic vegetation; on the horizon, the misty peaks of purple mountains.

The feast of beauty afforded by the second day of the chasse was even more rich and rare, for it had the grandeur and the music of many waters added to it. The cascade of Dya Mamon stands in the midst of an unsurpassable landscape, and the beauty and luxuriance of the forest growths are impossible to describe. Mr. Boyle seems to have been peculiarly susceptible to the sense of beauty in trees; to their mysterious, sympathetic life; to the curious stealthy whispering and watchfulness of them; to that unwritten, unspoken poetry which has dwelt in the forest lords from the beginning, which inspired the pagan mind with its beautiful myth of the Hamadryad, and inspired the great Christian saint Columba, when, in the terribly pathetic lament of his exile, he sang:

Crowded full of heaven's angels in every leaf  
of the oaks of Derry.

On the heights to which the chasse led

them, the bamboo grows to an unusual altitude, and in extraordinary luxuriance; heavy masses of the sombre jamrose are mixed up with all this light feathery green foliage; white palms, growing profusely close to the water's edge, finish off the vista with their unequalled, slim, Asiatic grace. Mr. Boyle remarks upon the scarcity of tree ferns. "It is curious," he says, "how often one seeks in vain for these beautiful children of the forest. Like many other beautiful children, they are capricious, and you may go on sometimes for miles, and never find one in the very spot where you would fancy they would most love to grow." Mr. Boyle's "post" was close by the Dya Mamon; at his feet the river spread out into a broad, shallow basin, with hundreds of transparent side-pools, and curling eddies forming rapids which subside into the enormous green glassy sheet, and slide down a sheer height of one hundred feet. Right opposite to him rose a noble mountain, cone-shaped, and thickly wooded to the summit; true primeval forest, against whose unsullied majesty, against whose lavish beauty, no human hand has ever been raised. "Across that amphitheatre of trees, for centuries and centuries, sunshine had gleamed, and the fierce hurricane had swept; but as for the interference of destructive man, those green fastnesses rose up intact, un mutilated, as on the evening and morning of that day when God saw that they were good." There are strange, wild stories current about the falls which bear the uncreole Malagasy name of "Dya Mamon." The country about was a favorite place of refuge for the Maroons, or fugitive slaves, in the bad old times of slavery. The wildness of it afforded them shelter and concealment, as long as the pursuit was confined to the masters; but when those hunters of human game called bloodhounds came to their assistance, no hole, ever so remote, seemed any longer inaccessible.

This is the story of the naming of the falls: "A Malagash Maroon, called Dya Mamon, continued to baffle every attempt to take him for ten years. He was tracked again and again, and actually hunted up to the edge of the falls, but there he always gave his pursuers, both men and dogs, the slip. One day, when so chased, he was seen to leap

the falls, and it was supposed he was drowned; but after a while, to the amazement of all, he reappeared. I could not ascertain what was his reputed end; but, in consequence of the exploit above mentioned, he was given credit for being in league with the devil, if not the devil himself, and was left unmolested. Many years after, it was discovered that a large cavity existed in the rock behind the falls, and was completely concealed by them. Into this it is supposed that Dya Mamon, being an expert diver, had been accustomed to retreat."

The way back from the chase lay upon the other bank of the river, also wondrously beautiful, and so Mr. Boyle had seen divine haunts of Nature which many a transient dweller in the island never sees, hears, or dreams of, but goes away believing that, beyond its skies, Mauritius has nothing to show but strangely peaked mountains, the eternal cane-fields which he passes every day, and the ravine he does not care to explore. On a journey to the "Piton de la Rivière Noire," the highest but one of the most accessible mountain-summits in the island, splendid specimens of the ebony-tree abound. Two kinds are found in the Mauritius woods, and many members of the citron family. The mandarin, the pamplemousse, and the vanilla, which is an orchid, also abound, and the beautiful wild coffee-tree. As they wound their way on foot, the baggage being carried by the Malabars, along the steep uprising path, the scene around was of magical beauty. Beyond lay the blue, sparkling, foam-flecked sea; above, the cloudless azure sky; around, the lavish and magnificent tropical trees. Three-quarters of the way up, they rested, and "revelled in the view." Well they might, when even the pale fancy of it which written words can give, is full of gladness and of rest. Three or four gorges converging to a point, their sides densely wooded from where they touch the earth to where they seem to touch the sky; down at their bases, the dark, narrow, serpentine passage, along which the mountain road curved and twisted, looking like a broad black ribbon, and the briskly running stream like silver threads woven into it. Massive sombre tufts here and there lying broadly in the lighter shades of

green, which must have been the tops of mango-trees; the foreground a heap of giant leaves such as one only sees in the tropics, and each leaf a grand study in itself. Aloes with their bell-clustered, lily-loaded, wandlike stems. The blending colors of a marvellously vivid rainbow hanging its gorgeous veil over the scene.

The summit of the mountain reached, a vast interminable forest lay beneath them on the other side; so they descended quickly, and plunged into it. The wonderful beauty of tropical forest has no drawback in Mauritius. The song of birds is rare indeed, but the cooing of the doves is constant, and no venomous thing is to be dreaded. Snakes are utterly unknown, and toads, out of the museum, do not exist. No briars, no thorns, no poisonous growths, but innumerable "healing plants" and herbs fit for food. A rank luxuriance, a wild unrebuked race of vegetable giants, tangled festoons of creepers starred with the most brilliant flowers, hanging down like strung jewels—these are the accidents, the superfluities of the forest growth, the addenda to the cocoa, and the palm, the breadfruit, the bamboo, the cayenne, the mango, and countless others. There they are, amid the stately trees, and the coils of lithe "lianes;" each unconsidered thing among them a treasure of price for conservatories far away, but free and far more beautiful in their native home. "If you look down," says the writer, treating of the tramp through the principal forest, "there are green depths as it would seem bottomless; if you look up, there is roof upon roof of an exquisitely variegated verdure, the tall tree-fern piercing through the under and densely tangled vegetation with its umbrella-shaped head waving like a coronet of feathers. At times you see the ghastly bared shape of some tempest-stricken child of the woods, stretching across as if to hide its nakedness among the surrounding millions of leafy things. The hope of giving any adequate idea of the witchery of a scene like this is vain. As I write, I think of Mendelssohn's words: 'Every man who looks on the like, must thank God for having endowed him with sufficient power to grasp and feel the grandeur of what he sees,' and fully feel their truth."

When the party reached cleared ground, and were walking across the edge of the ravine, they saw an occasional hut on the other side, hardly to be distinguished, so completely had the broad-leaved "calibasse" taken possession of roof and sides. They also saw frequent specimens of the raffia, a palm whose branches measure twenty feet and upward in length, and are broad in proportion, and which flowers at a ripe age for the first and only time, then droops and dies, when the long masses of polished cones which have clung to it, fall, and sow themselves, and so replace the parent tree. Amid all this lavish beauty, scarlet "cardinal" birds flying from branch to branch, glittered like living gems. Quite suddenly they emerged into an open space where a startling contrast presented itself. "Before us, extending up to the bases of the green hills which rise on two sides of it, lay the famous Bois Sec, a wide flat surface of many acres, thickly dotted with the tall, gaunt, ghastly, utterly and entirely denuded stems of hundreds and hundreds of dead forest trees—some high, some by comparison low, but each and all widely stretching out their scorched-looking, withered limbs. Not a single green tree was to be seen. One might almost have thought one beheld a crowd of giants in the act of raising their bare arms in frantic supplication toward heaven. Various are the conjectures as to this peculiar assemblage of dead trees, these phantoms that look as if they had stalked out of an antediluvian forest to congregate by themselves. We saw the Bois Sec on a dull, murky morning—sunshine would have been far less in harmony with the sublimity of such a spectral landscape. Something of awe crept over me as skeleton after skeleton was shut out of sight by the wreaths of the increasing mist. It was like the winding and unwinding of the lifeless body." On again into the heart of the forest, where the branches lap over so thickly that the rain is broken in its fall, and the trees form a tented road for the travellers, where everything is green and glittering, a wildness of beauty, color, and sweet scents, where the mimosa springs from the centre of the stronger trees, where huge orchids nestle in the rotting

forked branches, and small ones, trodden under foot, give out delicious perfume. Here is an extensive grove of the vacoa, a gigantic tree, resembling the seven-branched candlestick of the Jewish temple. On, on again along the ridge of the Tamarind Mountains, where the woods are yet stiller and more devoid of life, where birds perch quietly within reach of one's arm, and where the wide gorge opens magnificently upon a view of the sea with the islands apparently floating on it.

From the splendid wilderness of the tropical forest, Mr. Boyle takes us to the Botanical Garden at "Pamplemoasses," which he calls "the Richmond of St. Louis." It covers sixty acres, and has the cloudless sky overhead, no glazed roof, no artificial atmosphere, and no pigmy growth. Here are lines of palms which form a gallery four hundred feet long. Here is *Bignonia speciosa* which "might stand alone in an English park, and cut no bad figure as to size, loaded with deep orange clusters, each single flower of the bunch as big as the expanded one of our common magnolia." Here is the "flamboyant" or flaming tree, with its crimson flower; and the "sang dragon" from Guadeloupe, with its gorgeous mixture of crimson and golden brown. Here is the "bonnet carré," white, delicate, gigantic, and more beautiful than any; the dillenia, with countless snowy blossoms, larger than the grandest Spanish chestnut-flower, which you may pass by, in its full bloom, and not see so much as a bud. To see them, you must creep under the overarching branches, and there, "in beauty curtained from the light," under the rich green cupola, many hundreds of big white bells, of exquisite delicacy; and within the corolla such a collection of large stamens, all so thickly powdered with their golden pollen, that it seems as if a second flower grew within the petals. Yonder is a grove of nutmeg-trees; near at hand are clove and cinnamon, ginger plant and pepper tree, areca, betel, cayenne-palm, date-palm (which to look at is to dream of the desert), sago-palm (which to name is to wake up to the reality of the nursery dinner), the ginger-bread-palm, the cocon, and a host of others.

To follow Mr. Boyle from the trees and the plants to the flowers, and thence



to his description of the climate, is to receive a succession of impressions of exquisite beauty, and of surroundings amid which the "mere joy of beauty" might possibly be converted from a poetical myth into a practical fact. He was fortunate as he was enthusiastic and sympathetic, and fortune favored him. He explored the beauties of Mauritius thoroughly, and was not, after all, obliged to leave the island with his curiosity unsatisfied in any one particular. He did see a hurricane.

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 Sharpe's Magazine.

LEAVES FROM MY MEDITERRANEAN  
 JOURNAL.

GIBRALTAR.

NOTWITHSTANDING the ever-flowing stream of passengers to and from India, little is known even by such travellers themselves of Gibraltar, the greatest stronghold in the world. Steamers do indeed call, and hastily take in coals, but the short space of time thus placed at the disposal of the passengers scarcely suffices for more than a hurried visit to the far-famed "galleries," or a stroll in the Almeda Gardens. The writer having, however, visited Gibraltar under circumstances admitting of a more lengthened stay, had ample opportunities for observation. "The Rock," as Gibraltar is familiarly termed, has been compared, and not inaptly, to a gigantic lion couchant; this resemblance will at once strike even the casual beholder who sees it for the first time from the sea. When, however, he hears that the great sleeping mass of stone before him contains nearly one thousand guns in position, and some of which admit of sufficient depression to hit an object at 150 yards, he will be more than ever impressed with the aptness of a figure so expressive at once of power and of repose!

The origin of the name Gibraltar is traced to a compound of the word Gibel (mountain), and Tarif (name of the now-ruined castle, which latter is believed to have been called after its builder), the leader of the first Moorish attack in the eighth century.

The ruins of Tarif still present an object of considerable interest to antiquarian inspection, and amply testify the ex-

cellence of the Moorish architecture; after the lapse of one thousand years. The African sway in Spain was finally broken, after a duration of six hundred years, by Ferdinand and Isabella, and the Saracen intruders finally expelled in the year 1610. Since the time of Ferdinand IV., the assailants on the one hand, and the defenders on the other, have invariably been Christians, and its subsequent history is a mere record of daring attack, and almost always successful defence. An incident related of one of these sieges serves to illustrate the spirit of the age. A foreign garrison was in possession of Gibraltar, and the Spaniards were endeavoring to expel the intruder by storm, and the fortune of war seemed now to lean to the side of the foe, and anon to the native forces. It is said that the then Queen of Spain, who was a personal spectator of the contest, ascended a neighboring hill, and there took her seat, swearing that "she would never leave it till she saw the Spanish ensign waving over the fortress." In support of the story of this rash vow, the remains of a stone seat are still pointed out as the Queen of Spain's chair, which indeed she might have continued to occupy till the day of her death, had not the governor of Gibraltar, on being apprised of the circumstances, hoisted the Spanish ensign for a moment, and so released her from her royal oath. The disappointed Queen was thus complimented by the gallantry of the foe, though the chagrin caused by the defeat of her forces may have served to dim the lustre of the act, at least in her eyes. The story lives, whether well founded or not, and may be dismissed with the Italian comment, *Se non è vero è ben trovato*.

Gibraltar in time, and by reason of its successive resistances, came at last to be regarded as impregnable. This impression was, however, dissipated by Sir George Rooke in 1702, who, in return for having captured this the strongest fortress in the world, received an empty letter of thanks! Several attempts were made to recover possession of the Rock by the Spaniards, within the first ten years of its capture by the English; and its position naturally still causes it to be looked upon with jealous eyes by the Spanish people. An instance of the

way in which the English occupation is regarded may be seen in the fact that the neighboring village of San Roque continues to use the following formulary in all its public documents: "We, the municipality of the most noble and most loyal city of Gibraltar, sitting in San Roque, on account of the loss of that fortress," &c., &c. That Spain should meditate any new attempt to wrest "that fortress" from the English in the present day is not very likely: still, former experiences serve to suggest caution against the possibility of a surprise; and preventive regulations, such as the placing of sentries on every available post, the raising of the drawbridges at sunset, &c., serve to warrant the well-known saying that "Gibraltar is always in a state of siege."

Between Gibraltar and the mainland of Spain lies the neutral ground, as the narrow strip of land is called, either boundary of which is duly guarded by a line of sentries, so that English and Spanish uniforms severally ornament the boundary of their own possessions; and this at so little distance apart, that both may be seen at one and the same time! English sentries are not only posted in all parts of the town, but swarm upon the fortifications; and on a still evening, the words "All's well" may be heard to pass from mouth to mouth, a hundred voices calling up the slumbering echoes of the Rock in succession.

Colonel Drinkwater's History of the siege of Gibraltar in 1782-3 is the best extant, and to it the reader is referred for full particulars of that memorable event. Suffice it for the purpose of the present sketch to say, that on that memorable occasion, a comparatively small British garrison held out successfully against the allied forces of France and Spain, led on by the victorious Duc de Crillon, and further encouraged by the presence of two members of the French Royal Family. The combined fleet consisted of 47 sail of the line, besides frigates and smaller vessels, as well as battering ships, carrying guns of large calibre; two of the last-mentioned were, after an obstinate cannonade, set on fire by red-hot shot from the fortress, and the remaining eight were burned by their own fleet, to prevent their falling into the hands of the English. The

garrison, although harassed by a tedious siege, were not unmindful of the claims of humanity, and sent out a body of marines under the command of Brigadier Curtis, by whom many of the enemy were saved from the burning wrecks. At length the allies, finding success hopeless, raised the siege and departed. No subsequent attempt has ever been made to dislodge the British from their rocky stronghold, now further strengthened as it is by both galleries and more modern defences. The most important work executed since the great siege, was the construction of the galleries, designed and completed by Willis, an Englishman whose name is but little known in connection even with this his great work. The galleries, which are tunnels cut out of the solid rock, are at considerable elevation above the level of the sea, and being furnished with embrasures twelve feet apart, afford position to an almost incredible number of heavy guns. The surprise of the visitor is naturally excited, when on entering the galleries he perceives the scale upon which they are constructed; it is so much greater than that formed by any impression he could have had from a seaward survey of the surface of the Rock. To a distant observer, the embrasures are of course visible, but at such height as to dwarf their real size. The whole appearance of the Rock, as seen from the sea, is that of a barren surface, with mere exceptional veins of vegetation in the clefts or crevices. Flocks of wild goats seek in this scanty herbage a precarious pasture, and derive from it much high living, but little nutriment. The most interesting inhabitants of the Rock, however, are the monkeys, and of these, strange tales are related; but tails they have none, and ought in consequence to be called apes. Certain it is, that a similar race is to be found on the opposite mountain on the African shore; this fact, and the further one that the apes of the Rock are the only apes to be found in Europe, have sufficed as foundation for the tradition of there being some never discovered submarine passage, by which it is said the African apes originally crossed to the European side of the sea! Without vouching for the existence of the hidden way in question, it may safely be admitted that the Gibraltar

monkeys, as they are still popularly called, possess very considerable sagacity; the proofs of this are so numerous and convincing that they have given rise to the well-known saying that the Gibraltar monkeys can speak, but conceal their possession of this gift, through fear that men would make them work if it were known they could speak. Of the many "yarns" told of the intelligence of the Rock monkeys, the following is one of the best authenticated. An unusually large assemblage of monkeys was once seen to have collected upon a ledge of rock over the Almeda gardens. The noise and gesticulations of this strange assemblage soon attracted the attention of the visitors then assembled in the garden beneath. The latter soon perceived that the noise proceeded from the Simian conclave on the overhanging height, and observed, or fancied they observed, that one individual of the species stood in the unenviable position of the "prisoner at the bar;" a conclusion that was subsequently confirmed by the fact that the whole conclave, at its breaking up, fell upon the unfortunate monkey in question, and beat him so unmercifully, that he gladly took refuge by escaping into the lower ground, where he was speedily captured. Report says that although he subsequently obtained his liberty on several occasions by breaking his chain or otherwise, it was always observed that the line of his flight was never once directed toward the rocky platform from which he had come; from which circumstance it was concluded that the recollection of what had there taken place was still painfully vivid to the fugitive!

The Almeda garden, of which mention has just been made, is the grand promenade of Gibraltar, and lies on the western side of the rock. Here aloes, geraniums, and other ornamental plants abound; and the grounds are so tastefully laid out, that few prettier gardens can be seen than this the favorite resort of the inhabitants. Numbers of well-dressed people, exhibiting every variety of national costume, may be seen every fine afternoon, some listening to the bands of music, others wandering through shady walks with the true *dolce far niente* air of southern countries. From the Almeda to the neutral ground

is such an easy walking excursion, that we may pass thither in a still shorter description. Disappointment, however, awaits any one who expects much from the unclaimed, untitled patch, separating the British and the Spanish possessions. Still, as the neutral ground it has acquired a certain sort of notoriety from its being the scene of many encounters between the *contrabandistas* (smugglers) and *carbineros*. The heavy duties on tobacco and salt when imported to Spain made the evasion a lucrative one when successful. Hence Gibraltar being a free port, frequent were the attempts made by smugglers, who under cover of night tried to pass from the neutral ground to the mainland. Considerable vigilance on the part of the Spanish authorities was required to keep down this contraband traffic, and the results were, that the *contrabandistas* and the *carbineros* frequently came into angry and sanguinary collision. Should the former be in sufficient force they tried to fight their way through; but if inferior in numbers, they invariably "made a run for it," and took refuge in the English lines, where they were duly made prisoners, an alternative they gladly accepted as the lesser evil.

A more pleasing excursion, though more distant than the last, is a visit to Catalan Bay, with its colony of Genoa boatmen. These latter emigrated from their own country more than 100 years ago, but do not seem to have benefited much by the change of residence, nor to have altered their habits of life. The only possessions acquired by these adventurers consist of the shores of a small bay on the east side of the Rock, which here rises to a height of 1,400 feet above the level of the sea, and is crowned by a signal station. The view from the signal station is one of the finest conceivable, and amply repays the trouble taken in accomplishing the rather laborious ascent. Once arrived there, however, the tourist will find every possible variety of landscape presenting itself, so that he will have in one magnificent *coup d'œil*, the gigantic Sierra Bullones, rising to a height of 3,000 feet, in contrast with the undulating plains of verdant Andalusia, backed by the snow-capped peaks of the Sierra Nevada, till the eye finally rests, to conclude the picture, on the

little town of Algesiras, a place of little importance, but associated with the past from its having been the rendezvous of the combined fleets of France and Spain, at the time of the memorable siege. Gibraltar possesses no public buildings worthy of further mention, than that the governor's house was a convent, and is still so called: there are several churches, and one of the largest is the cathedral. The streets are, after the fortifications and the Almeda gardens, the sight best worth seeing, owing to the numbers and varieties of national costumes, native and foreign, to be met with at every turning. The first impression given by this medley of costumes is suggestive of an International Exhibition, and cannot fail to strike the visitor as not the least of the characteristics of this far-famed and invulnerable spot.

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Popular Science Review.

#### JUPITER WITHOUT HIS SATELLITES.

BY RICHARD A. PROCTOR, B.A., F.R.A.S.

AUTHOR OF "SATURN AND ITS SYSTEM," &c.

ON August 21, of the present year, the planet Jupiter will appear, in telescopes of moderate power, to be unaccompanied for the space of one hour and three quarters by the satellites usually seen in attendance upon him. This phenomenon has been so seldom observed that considerable interest is attached to it. Molyneux on November 12, 1681 (O.S.), Sir W. Herschel on May 23, 1802, Wallis on April 15, 1826, and Dawes and Griesbach on September 27, 1843, are, I believe, the only observers who have hitherto seen Jupiter without his *comites*. It cannot be doubted, however, that if the weather be favorable, the number of observers who have seen the phenomenon, will be very largely increased before midnight August 21. It will not be wholly as a matter of curiosity that observations will be made on that night. The record of phenomena presented by Jupiter's satellites is a regular part of "observatory work," and is very necessary for the improvement of the theory of their motions,—an important astronomical subject. A special value is attached to the record of phenomena separated by a small interval of time, so that the observations made are fairly comparable *inter se*, free from the

errors arising from variations in clock rates, instrumental changes, and the like. Now on the evening of August 21 there will be *eight* phenomena visible within six hours,—viz. the disappearances, and reappearances of four satellites. To observers suitably armed there will, indeed, be no less than *thirteen* phenomena visible within the above-named interval; since of the entrances and exits of the shadows of three satellites, six phenomena in all, five will be observable with good telescopes.

Six months ago, I had occasion to treat of Mars, nearly the lowest in the scale of planetary magnitude, and interesting as presenting a charming miniature of our own earth. The contrast between this orb, and the planet we are now to consider, is marked indeed. Jupiter stands at the other end of the scale of planetary magnitude. He surpasses our earth more than 1400 times in volume. Saturn alone can be compared with him in this respect, but even Saturn is but half as large as Jupiter. In mass, this superb planet is not merely "facile princeps," but exceeds much more than twofold all the other planets taken together. We may view, indeed, in Jupiter and his system, a miniature, but instead of being a miniature of our earth, it is as a miniature of the whole solar system that he is to be regarded. The sun himself does not so greatly exceed Jupiter in volume as Jupiter does our earth. And the bodies which circle round Jupiter travel with velocities comparable with those of the swiftest members of the solar system. While Mercury and Venus travel 100,000 and 80,000 miles an hour, and our earth travels 68,000 miles an hour round the sun, Jupiter's inner satellite travels upward of 40,000 miles an hour around its primary. Mars travels 55,000 miles an hour round the sun, the second satellite travels 32,000 miles an hour round Jupiter. Jupiter himself sweeps less swiftly round the sun than these satellites do around him, so that through a portion of their orbits they are actually retrograding. The third satellite also travels so swiftly round Jupiter, as to be reduced very nearly to absolute rest when its velocity acts in a contrary direction to that of Jupiter. The fourth satellite travels less swiftly than the third, but yet as



swiftly as the planet Saturn in his orbit around the sun.

Nearly every celestial object has an interest attaching to it, other than that derived from its physical aspect,—an interest which may be called historical. In the moon, for instance, we see an object without which (it is not too much to say) astronomy would never have approached its present state of exactness and accuracy. Mars, in like manner, afforded evidence such as no other planet could supply, when Kepler was engaged in the series of researches which rendered his name illustrious, and without which Newton's views might never have been directed to gravitation as a universal principle. Venus is connected with the determination of the fundamental element of all astronomical measures,—the sun's distance from the earth. Mercury, Saturn, Uranus, and Neptune, the sun, fixed stars, comets, asteroids, and nebulae, all have their historical interest, derived from the evidence which they have afforded on special questions of interest. Jupiter is second to none in this respect. At a critical period in the history of astronomy, when the world of science was divided on the subject of the Copernican Theory of the Universe, and when all without the world of science was steadfastly opposed to the new views, the discovery that Jupiter was the centre of a miniature-system, circling around him as the theory in dispute taught that the planets circled around the sun,—came opportunely as an illustration, and to those who could grasp the significance of the phenomenon, as a proof of the views of the German astronomer. Later came a yet more remarkable and important discovery, through the observation of Jupiter's system,—the discovery that light does not travel as had been supposed instantaneously, but with a measurable, however inconceivable, velocity. Through this discovery, supplemented by Bradley's discovery of the aberration of the fixed stars, came a proof—which is absolutely beyond cavil or question—of the true theory of the solar system. Supplementary proofs of Newton's views have been derived, also, as might be expected, from the influence exerted by a planet whose disturbing agency so largely exceeds that of all

the other members of the solar system.

Let us return to Galileo's discovery of the satellite-system of Jupiter, and the influence of that discovery on the views of astronomers. It was immediately felt, by those who opposed the new views of Copernicus, that the discovery of Jupiter's moons was fatal to their objections. Accordingly they spared no efforts in casting doubts on the observations of Galileo. Some asserted that the Tuscan had seen no such sights as he pretended. Others that he had indeed seen them, but in illusive dreams; that he was the sport of demons specially sent to punish him for a prying, inquisitive, and truth-doubting spirit. "We have looked," they said, "for hours through his telescope, and have seen no such sights as he and his friends have described. When at length it was impossible to deny the existence of Jupiter's moons, it became the fashion to dispute the real character of their movements. It was argued that these objects do not revolve around the planet, but, travel backward and forward behind its disk. Down to the middle of the seventeenth century, many refused to believe that the satellites actually circulate around Jupiter.\*

The discovery by Cassini, in 1665, that the satellites can be traced when their orbital motions carry them between the planet and the earth, placed the true character of these bodies beyond a doubt. By means of Campani's object-glasses of 100 and 136 feet focal length, Cassini was able to see the satellites projected as small bright spots on the disk of the planet. He found also that their motions when thus situated, are precisely those due to an orbital motion around the planet, and therefore very different from those of bodies attached to the planet. This circumstance, and the fact that the bright spots remain unchanged in form

\* For aught I know the motion of the satellites may be denied to the present day. In the preface to the last edition (1823) of the *Principia*, edited by the learned Jesuits Le Sueur and Jacquier, there occurs the following remarkable passage:—"In adopting the theory of the earth's motion, to explain Newton's propositions, we assume another character than our own, for we profess obedience to the decrees of the popes against the motion of the earth." It is, therefore, not wholly impossible that decrees may have been promulgated against the circulation of Jupiter's satellites also.

as they pass over the disk, proved incontestably that he had not mistaken bright spots, such as are sometimes seen on the body of the planet itself, for the satellites whose ingress on the disk he had previously watched. But he was able to detect another evidence of the true nature of these bodies, since he discovered that the shadows which they cast upon the body of the planet, are visible as small dark spots upon the disk.

Forty years later Maraldi observed that the fourth satellite does not always present the same appearance as it traverses the disk of the planet. Sometimes it appeared to him as a bright spot, at others it appeared darker than the planet. He noticed also that when the satellite seemed to be projected as a dark spot, this spot was smaller than the shadow of the satellite. "According to the laws of optics," he says, and others have followed him in the statement, "it ought to have appeared larger." Assuming this view to be correct, and that the observations of Maraldi were rightly interpreted by him, we are led to a somewhat singular result. It has been proved (incontestably, I think), by Sir. W. Herschel's observations, that all the satellites of Jupiter follow the law observed in the case of our own moon—turning constantly the same face toward their primary. He observed that each satellite varied in brightness in different parts of its orbit, but that when it arrived at the same position in its orbit, "it exhibits always the same degree of brightness." It would follow from this, that each satellite in transiting the disk of Jupiter should exhibit invariably the same appearance—since when so situated we always see the same half of the satellite, that half namely which is invisible from Jupiter. This, at least, would always happen, unless a satellite were subject to transient variations of brilliancy arising from physical change occurring on its own face. Maraldi's observation would seem therefore to point to the occurrence of such changes on the fourth satellite, and corresponding observations of variations of brilliancy in the other satellites, by Cassini, Maraldi, and Pound would lead to the same conclusion as respects these bodies also. The observation by Bianchini, that in other parts of their orbits the satellites are subject

to considerable variations of brilliancy, would seem to confirm this result.

Now without asserting the impossibility that the above explanation is the true one, I cannot but consider that it is highly improbable that the satellites of Jupiter are actually subject to physical changes of the kind implied. The observations of Sir. W. Herschel are decidedly opposed to Bianchini's view, and scarcely less directly contradictory of Maraldi's. It appears to me far more probable that the apparent loss of brilliancy observed by Maraldi was relative only, and due to the projection of the satellite on a brighter part of Jupiter's disk (which we know to be subject to partial variations of brilliancy) than that the whole or nearly the whole hemisphere of a satellite should suffer change in the manner imagined. The fact that the satellite appears smaller than the shadow, so far from being contrary to the laws of optics, as many have supposed, is directly deducible from those laws. The black umbra should indeed be smaller, but the complete shadow formed of umbra and penumbra together, should be larger than the satellite.

I may notice in passing, that observations having reference to the relative brilliancy of celestial objects are at all times difficult, but that those made toward the end of the seventeenth, and in the earlier part of the eighteenth century, appear specially unreliable. Whether from the use of unwieldy focal lengths, or from imperfection in the single object-glasses, or from a want of thorough appreciation of irregularities due to atmospheric causes, certain it is that there are recorded a multitude of observations of this sort in the interval named, which have not been confirmed by subsequent observation.

Soon after his discovery of Jupiter's satellites, Galileo perceived the use to which the phenomena they presented might be applied for the determination of the longitude. He was sanguine indeed, as to the use of this method for finding the longitude at sea, not being aware, it would seem, of the mechanical difficulties which render the method unavailable on shipboard. With the object of constructing tables of the satellites' motions, he observed them for many years. The Tables he formed dis-

appeared unaccountably on the death of his pupil Rimeri, to whom he had intrusted them for publication, and were accidentally discovered a few years ago in a private library at Rome. Notwithstanding the amount of labor bestowed upon them, the Tables are far from representing with accuracy the motions of the satellites. Galileo, indeed, and those who followed him in attempting the work of tabulating these motions, altogether underrated the difficulty of the task. A long series of observations by Hodierna, Borelli, Passini, Maraldi,

Bradley, and a host of other observers, the rigid theoretical scrutiny of the subject by Newton, Walmsley, Euler, Bailly, Lagrange, Laplace, and others, and a laborious comparison of the results of observation and theory, by Lalande, Wargentin, Delambre, and Woolhouse, have been required to bring the theory of the system to the exactness and accuracy it has now attained.

The relations actually presented by the motions of the planets are very singular. They are partly exhibited by the following Table:—

Sat.	Sidereal Revolution.	Same in Seconds.	Sidereal Motion per Second.	Distance from Jupiter's centre.
	d. h. m. s.		"	miles.
1	1 18 27 33.505	152853.505	8.478706	278,542
2	3 13 13 42.040	306822.040	4.223947	442,904
3	7 3 42 33.360	618153.360	2.096567	706,714
4	16 16 32 11.271	1441931.271	0.898795	1,242,619

It will be observed, at once, that the period of the second satellite is almost exactly double the period of the first, and the period of the third almost exactly double that of the second; and of course, a corresponding relation holds amongst the sidereal motions of these bodies. This of itself is remarkable, but far more singular is the relation which regulates the extent to which the above relations differ from exactness. It is to exhibit this that I have added the column of sidereal motions, because the relation in question is masked when the sidereal periods only are given. It will be found that the sidereal motion of the first satellite, together with twice the sidereal motion of the third, is *exactly* equal to three times the sidereal motion of the second satellite. Thus:—

$$(8''.478706) + 2(2''.096567) = 12''.671840 = 3(4''.223947).$$

To show the effect of this singular relation, suppose the first and third satellites to start from conjunction, then after four revolutions of the first satellite, the second has performed nearly one revolution, so that they are very nearly in conjunction again, but have in reality passed their conjunction by a small angle. At the actual moment of conjunction, the first has described three complete circumferences and an arc (A, suppose),

which is nearly a complete circumference, while the third has described the arc A only; thus *twice* the motion of the third satellite added to the motion of the first gives us three complete circumferences, and three times the arc A; and therefore by the above relation the second satellite has moved through one complete circumference together with the arc A. Hence neglecting complete circumferences the actual change of position of *each* of the three satellites is the arc A, very nearly equal to a complete circumference. They therefore hold the same relative position at the end as at the beginning of the interval considered. Now nothing was said as to the position of the second satellite. As a matter of fact when the first and third satellites are in conjunction the second is always in opposition to both. Thus the actual changes of position are those exhibited in fig. 1, in which it is to be understood that the dimensions of the satellites are largely exaggerated.

Wargentin, who devoted a life to the examination of the motions of Jupiter's satellites, but who was no adept in the higher branches of mathematics, found as the result of *observation* that the relation above described was so closely approximated to, that 1,317,900 years would have to elapse before the three satellites

could be in conjunction. This result affords an interesting measure of the accuracy of observation up to Wargentin's day, since Laplace has shown that the relation is absolutely exact. Librations *may* take place on either side of the mean state (though the most careful modern observations exhibit no trace of such libration), but there is no possibility of accumulative change, save by the influence of effective agencies external to the system. It is somewhat singular that the comet of 1767 and 1779 passed through the middle of Jupiter's system, without producing any observable derangement of the mean motions of the satellites,—a fact which proves conclusively that the mass of the comet must be small, its density inconceivably minute.

In Ferguson's astronomy it is stated that the motion of the fourth satellite presents no approach to a relation of commensurability with those of the others. A simple relation exists, however, with a closeness of approximation which is quite remarkable. In fact, throughout the whole solar system there is no relation of commensurability which brings closely following conjunction-lines so near to each other as this does.\* The relation is this:—three times the period of the fourth satellite is 50d. 1h. 36m. 33.813s., and seven times the period of the third is 50d. 1h. 57m. 53.520s.; the difference 21m. 19.707s. is less than one-1123rd part of the period of the fourth satellite. Thus when the third satellite has travelled round seven times from a given conjunction-line with the fourth, the fourth has gone round three times and in addition one-1123rd part of a circumference, that is less than 20', and the third overtakes the fourth before the latter has passed over 15' more (since  $15:35::3:7$ ). This conjunction-line, then, is separated from a preceding one (the fourth preceding) by less than 35'. The remarkable relation which causes the "Great Inequality" of Saturn and Jupiter, brings neighboring conjunction-lines nearly  $8\frac{1}{2}^\circ$  apart, a distance fourteen times as great as the above.

\* Since the above was written, I have found that some tables of elements of the Saturnian system give such periods to the satellites Dione and Enceladus as to produce a yet closer approach than that of the two satellites of Jupiter whose motions are here discussed.

From the connection between the motions of the first three satellites, it follows of course that the periods of the two inner satellites also approximate to commensurability with the period of the fourth. We have, in fact, fourteen revolutions of the second, or twenty-eight revolutions of the first, nearly equal to three revolutions of the fourth: but the approach is not so close as in the case of the third satellite.

From the relation holding between the motions of the first three satellites it is impossible that all these bodies should be eclipsed at once; but (as will be seen by fig. 1) at regular intervals all three are in the same straight line with the planet's centre. If this happen when the sun (and therefore the earth, which with reference to Jupiter may always be considered to be close to the sun) is near the same line, these three satellites will be invisible, one or two being eclipsed, two or one (as the case may be) being projected on Jupiter's disk. Such a phenomenon is not unfrequently visible.

That the fourth satellite may be hidden at the same time it must be nearly in a line with the other three. This relation is not often presented; and, as already stated, the concurrence of this relation with the requisite configuration as respects the sun and earth, is an occurrence very seldom to be observed.

A circumstance that tends to render the simultaneous disappearance of the four satellites more uncommon than it otherwise would be, is the fact that the fourth satellite is not necessarily eclipsed or occulted at each conjunction with Jupiter. It may pass above or below his disk or shadow. In fact this happens on an average in more than one-third of the revolutions of this satellite. This is ascribed by Sir J. Herschel to the greater inclination of his orbit; but this is not the correct explanation. In fact the inclination of the fourth satellite is at present less than that of any of the others, and the mean value of its inclination is always less than that of the others. The true reason why this satellite so often escapes eclipse, is its superior distance from Jupiter.

It is commonly stated that the third satellite cannot possibly escape eclipse or occultation as it passes behind its primary, and must necessarily transit Jupiter's



disc when passing before the planet. I find, however, that it is just possible for the third satellite to pass clear of Jupiter's disk in the latter case. A conjunction of many favorable circumstances is, however, required, and the phenomenon must be a very uncommon one—much more so, indeed, than that which forms the subject of the present paper. It is necessary that Jupiter should be in opposition when not far from perihelion, at which time it happens (and but for this the phenomenon could never take place) that the earth is at nearly her greatest distance north of the plane of Jupiter's orbit. The satellite's orbit must have its maximum inclination to Jupiter's orbit, and the satellite must also be at its greatest distance from the last named plane. The other satellites must also be so situated that the third is at its maximum distance from Jupiter; for it is noteworthy, that although the orbits of the two interior satellites are described as circular, and that of the third as of small eccentricity, yet these orbits have an *ellipticity* due to the mutual attractions of the satellites. This ellipticity is wholly different from the ellipticity of the planetary orbits. The former is centric, the latter eccentric, the sun being in the focus of each planetary eclipse, while Jupiter is at the centre of the ellipse traversed by the inner satellites.

The following facts combined with the information afforded by fig. 2, will suffice to enable the telescopic satisfactorily to observe the phenomenon of August 21. The planet rises at half-past seven, almost at the same moment that the sun sets. At 7<sup>h</sup> 44<sup>m</sup> Greenwich mean time, the shadow of the third satellite passes on to the disk, and the satellite itself passes on to the disk at 8<sup>h</sup> 14<sup>m</sup>. The first phenomenon will not be observable, as the sun will not be low enough beneath the horizon, nor Jupiter high enough above the horizon. Neither will the second phenomenon nor the entry of the fourth satellite's shadow on the disk, which occurs at 8<sup>h</sup> 17<sup>m</sup>, be easily seen. The remaining eleven phenomena will be readily seen, however. At 9<sup>h</sup> 10<sup>m</sup> the second satellite will disappear in the shadow of the planet. At 9<sup>h</sup> 28<sup>m</sup> the fourth satellite will enter on Jupiter's disk. At 9<sup>h</sup> 57<sup>m</sup> the shadow of the first satellite will make its appearance, followed in

seven minutes by the entry of the satellite itself on Jupiter's disk. At this time (10<sup>h</sup> 4<sup>m</sup>) Jupiter will be without satellites in telescopes of moderate power, but large telescopes will exhibit three satellites on his disk, together with their three shadows. At 11<sup>h</sup> 23<sup>m</sup>, the shadow of the third satellite passes off the disk, at 11<sup>h</sup> 49<sup>m</sup> the satellite itself. At 12<sup>h</sup> 13<sup>m</sup> the second satellite reappears from behind Jupiter, at 12<sup>h</sup> 16<sup>m</sup> the shadow of the first satellite passes off the disk, the satellite itself seven minutes later. Lastly, at 12<sup>h</sup> 59<sup>m</sup> the shadow of the fourth satellite, and at 1<sup>h</sup> 54<sup>m</sup> the fourth satellite itself, pass off Jupiter's disk.

In fig. 2, the paths traversed by the satellites and their shadows, are indicated. The figure represents the appearance presented in an inverting telescope. It is only necessary to invert the figure to see the actual configuration. It will of course be understood that the apparent slope of the paths will vary with the hour of observation. I have made the planet's equator horizontal, instead of estimating the slope for any assigned hour; because the planet's oblateness being very observable, affords a natural feature of reference.

It will be observed that the shadows of the four satellites are very different in appearance. I have drawn them, not as they have been seen in the telescope, but as it is certain that they would appear in telescopes of adequate power. The figure and extent of the penumbrae have been determined from the simplest optical principles applied to the known distances and magnitudes of the satellites. The figures of the shadows will suffice to afford an easy explanation of Maraldi's observation, that the shadow of the fourth satellite appears larger than the satellite.

At 10<sup>h</sup> 15<sup>m</sup> P.M. August 21, the position of the satellites and shadows are those shown in fig. 2, the second satellite being, of course, behind the disk. A little examination of the figure will show that a few minutes after half-past eleven the three interior satellites are in the same line with the planet's centre.

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London Quarterly.

WESTMINSTER ABBEY.

(Concluded from page 964.)

THERE is nothing more pathetic in English history than the brief career of Edward V. His mother, Elizabeth Woodville, took refuge in the sanctuary of Westminster at the time of his birth. She, her three daughters, and Lady Scroope took up their abode as "sanctuary women." The abbot (Milling) sent the provisions, "half a loaf and two muttons," daily. The nurse in the sanctuary assisted at the birth, and in these straits Edward V. first saw the light. He was baptized by the sub-prior, with the abbot for godfather, and the Duchess of Bedford and Lady Scroope as his godmothers. The Queen remained there until her husband's triumphant entry into London. On his death she again took refuge in the sanctuary, in order to escape from the plot which the Duke of Gloucester had laid against the life of her son. Only one of these, the Duke of York, she had with her as she crossed by night from the palace to the Abbey. The Abbot Esteney received her; all was confusion, and the Queen "sate alone on the rushes, desolate and dismayed." Soon the Thames was covered with boats full of Richard's men, who watched to see that no one passed into the sanctuary. When he heard that his nephew was already there, he would have taken away the child by force, but the two archbishops withstood him. Then it was suggested, that as the child was incapable of such crimes as needed sanctuary, so he was incapable of receiving sanctuary. Against the logic which made the refuge of thieves no protection to the innocent, the Queen protested by arguments rendered keen by motherly affection. She said, passionately, "In what place could I reckon him secure, if he be not secure in this sanctuary, whereof there was never yet tyrant so devilish that presumed to break? . . . But you say that my son can deserve no sanctuary, and therefore he cannot have it. Forsooth, he hath found a goodly gloss, by which the place that may defend a thief may not save an innocent. . . . I can no more, but whosoever he be that breaketh this holy sanctuary, I pray God shortly send him need of sanc-

tuary, when he may not come to it. For taken out of sanctuary I would not my mortal enemy were." But the archbishop, yielding to Richard's representations, at length induced Elizabeth to give way. She took a sobbing farewell of her child, whose fate maternal instinct forecast with a certainty which no logic could shake. "Farewell, mine own sweet son," she said, "God send you good keeping; let me kiss you once ere you go; for God knoweth when we shall kiss one another again." "And therewith," adds Miss Strickland, "she kissed him and blessed him, turned her back, went her way, leaving the child weeping as fast." He went to join his brother in the Tower, and the two little bedfellows were soon fellows in death. All was prepared for the coronation of Edward, "wild fowl for the banquet, and dresses for the guests." But the only king born in the Abbey, was the only king destined not to be crowned there. He and his brother were buried beneath a stair of the grim prison where they had been murdered. There their bodies were found in the time of Charles II., who ordered a marble monument to be erected to their memory.

The murderer was crowned in the Abbey, July 5, 1486. It was the most magnificent pageant ever seen; six thousand gentlemen from the north accompanied him in his procession from the Tower to Westminster Hall. There he "sate in the seat-royal, and called before him the judges to execute the laws, with many good exhortations, of which he followed not one." He then went to the Abbey, the Abbot met him with St. Edward's sceptre, the monks sang *Te Deum* with faint courage. He returned to the Palace, whence he went with the usual procession to the Abbey. "The lofty platform, high above the altar, the strange appearance of King and Queen as they sate, stripped from the waist upward, to be anointed, the dukes around the King, the bishops and ladies round the Queen, the train of the Queen borne by Margaret of Richmond, were incidents long remembered." \* "When the wicked perish, there is shouting;" and so, as Hume tells us, when the dead body of Richard was found, "all besmeared

\* *Memorials*, p. 72.

with blood," upon the field of Bosworth, it was "thrown carelessly across a horse," and "carried to Leicester amid the shouts of the insulting spectators, and was interred in the Grey Friars Church of that place."

The sovereign who has already won his crown on the battle-field with the good wishes of his subjects, may well afford to dispense with some of the ceremonial which a tyrant uses to establish his position. Lord Stanley placed the crown of England upon Henry's head at Bosworth. His coronation at the Abbey is described as mean, compared with his predecessor's. This may have arisen partly from his notorious parsimony; nevertheless, he could afford to be mean. After all, his marriage was a more important event than his coronation, since it gave to distracted and wearied England a pledge of peace by the union of the too long rival houses of York and Lancaster. Queen Elizabeth's coronation did not occur until two years after her husband's. The public rejoicing, so far exceeding that manifested at his own crowning, was highly displeasing to the King, and made him always treat his consort with suspicion. She was the first to be buried in that splendid chapel which goes by his name. The erection of this building was in every way a remarkable incident in Henry's reign; misers, when they do spend money, not unfrequently like to spend magnificently. The royal miser was one of these; out of his hoard, he built the Savoy and the chapel of Westminster. For the last, a site was obtained by sweeping away the venerable "White Rose Inn" of Chaucer's garden, and the chapels of St. Mary and St. Erasmus. It was dedicated to the Virgin Mary, whom "in all his necessities he had made his continual refuge." It was intended at first as a shrine for a new royal saint, "right shortly to translate into the same the body and reliques of his uncle of blissful memory, King Henry VI." If the King's body was removed at all, there was certainly, says Dean Stanley, no "solemn translation," nor did the canonization promised by the Pope take place. Admission into the calendar was a costly transaction, and it is likely that Henry VII. was deterred by the expense from carrying out his original in-

tention. That intention was supplanted by another. As the King became more firmly seated on the throne, the remembrance of his succession to the House of Lancaster was gradually merged in the proud thought that, as the founder of a new dynasty, he would, as his will expressed it, lie "in the common sepulchre of the kings of this realm with his noble progenitors." In fact, he traced his pedigree further back than those ancestors who reposed in the Abbey. While the red rose appears in every pane of the chapel, there is, round his tomb, intertwined with the emblems of the House of Lancaster, the red dragon of the last British King, Cadwallader, the "dragon of the great Pendragonship" of Wales. It was not only as the descendant of William the Norman, but as descendant of Arthur the Briton, that Henry desired to be commemorated. At the same time, he never forgot his own share in obtaining the throne. The angels which sit at the four corners of his tomb once held the likeness of the crown which he won at Bosworth. It was on January 24, 1503, that the foundation-stone of the new chapel was laid by Abbot Islip and Sir Reginald Bray the architect. It was to be Henry's chantry as well as his tomb, almost a second Abbey, to contain the new establishment of monks who were to sing in their stalls, "as long as the world shall endure." Saints and angels were sculptured in profusion; they are named specifically in his will, wherein we read, that to them "he calls and cries so to aid, succor, and defend him, that the ancient and ghostly enemy, nor none other evil or damnable spirit have no power to invade him, nor with their wickedness to annoy him, but with holy prayers to be intercessors for him to his Maker and Redeemer." He left injunctions for the performance of innumerable services, as though he himself inwardly feared that their days were numbered. When dying at his splendid palace of Sheen, now called, after him, Richmond, he made vehement protestations of amendment, and passionately grasped the crucifix, and beat his breast, "in accordance," as Dean Stanley says, "with that dread of his last hour out of which his sepulchre had arisen." His funeral was worthy of that sepulchre; as the

"black velvet coffin," with its "white satin cross from end to end," was being lowered into the vault by the side of the Queen's, "the archbishops, bishops, and abbots stood round and struck their croziers on the coffin with the word *absolvimus*." The Archbishop of Canterbury then cast in the earth; the vault was closed; the heralds stripped off their tabards, and hung them on the rails of the hearse, exclaiming in French, "The noble King Henry VII. is dead!" and then immediately put them on again, and cried, "Vive le noble Roy, Henry VIII.!" Within three months the venerable Margaret, Countess of Richmond and Derby, died and was buried with sincere sorrow, in the midst of the rejoicings at the marriage and coronation of her grandson. She belonged to the mediæval past, yet the inscription on her tomb was written by the "first and most universal of reformers," Erasmus.

The splendid coronation of Henry VIII. and Catherine of Arragon was memorable for the circumstance that then, for the last time, an Archbishop of Canterbury officiated with the sanction of the See of Rome. It was, indeed, the close of the old order, the beginning of the new. The death of Prince Arthur, in whose name Henry VII. had revived the memory of the adored king from whom he claimed descent, and the subsequent marriage of Arthur's widow with her brother-in-law, were not long in producing those momentous results which changed the course of English history. Thrice in the course of that same year did the new chapel witness royal obsequies. We have mentioned those of Henry VII. and the Countess of Richmond, his mother; they just lived long enough to see the death of the first-born of the fourth generation. The infant Prince Henry, the issue of the marriage of Henry VIII. with Catherine, died soon after his birth, and was buried in the Abbey. He was the first of the children that were born only to die; his death was the first link in that chain of logic which convinced Henry that his marriage with his brother's wife was a crime, which led to that famous rupture with Rome we call the Reformation. Another coronation followed. Mr. Froude has described it in one of the choicest passages in the English language

—the crowning of Anne Boleyn. After her, none of Henry's Queens were crowned. Jane Seymour would have been, but for the plague, which raged in the Abbey itself. It was beside this, his best-loved queen, that Henry was laid at Windsor.

This desertion of the Abbey, as the place of royal sepulture, was but one sign of the great change that had passed over the edifice. The monastic buildings connected with it became the property of private persons, the chapter-house was turned into a record office. In 1539, Henry took possession of the Abbey itself, then valued at 3,977*l.*; he had spared Peterborough for the sake of the tomb of his first wife, so he spared Westminster for the sake of his royal ancestors, especially his father's tomb. But though he did not destroy, he revolutionized; he ordered the Abbey to be governed by a dean and prebendaries; a little later he dissolved that government, and by letters patent, dated December 17, 1540, erected it into an episcopal see, with bishop, dean, and twelve prebendaries, and made Westminster a city, and allotted all Middlesex, save Fulham, for the diocese, ordering the county to be subject to the jurisdiction of the Bishop of Westminster, as it had before been subject to that of the Bishop of London. The only Bishop of Westminster was Thomas Thirlby, who was consecrated in 1540. He was translated to Norwich when he had sat nine or ten years, and, according to Dugdale, had "entirely dilapidated" the patrimony belonging to the Abbey. It fell to him to receive Edward VI. at his coronation; the only king ever met at the Abbey by a Bishop of Westminster. Edward was crowned on Shrove Tuesday (February 20), 1546. He was but ten years old, and partly because of his tender years, and partly because "many points of the" service "were such as by the laws of the nation were not allowable," the mass was much abridged. The King's god-father, Archbishop Cranmer, officiated, who, instead of keeping to the ancient form, whereby the sovereign was presented to the people for their election, presented him as the "rightful and undoubted inheritor." The unction was performed with unusual care. "My Lord of Canterbury," says Strype, "kneeling on his knees, and the



King lying prostrate upon the altar, anointed his back." The Lord Protector, the Duke of Somerset, "held the crown in his hand for a certain space," and it was set on the King's head by the Duke and the Archbishop. There was no sermon, but Cranmer delivered a short address, in which, with the utmost boldness, he denied the supremacy of the Pope, and the virtue of the very ceremony which he had just so carefully performed. He said that the King was God's anointed, "not in respect of the oil which the Bishop useth, but in consideration of their power, which is ordained. . . . The oil, if added, is but a ceremony; if it be wanting, the King is yet a perfect monarch notwithstanding, and God's anointed as well as if he was unctioned." He added, that "the Bishop of Rome hath no authority; therefore, not from the Bishop of Rome, but as a messenger from my Saviour Jesus Christ, I shall most humbly admonish your Royal Majesty what things your Highness is to perform." Edward abolished the Bishopric of Westminster, and restored Middlesex to the See of London. When he died of decline, seven years later, his sister Mary, retaining for the Abbey the same love and veneration which was felt by her grandfather, caused the young King to be buried in the chapel of Henry VII. This funeral was a matter of severe controversy. For a whole month the royal corpse lay unburied, while the Queen carried on the negotiations with her minister respecting the burial rites. The result was a compromise. In the chapel, teeming with mediæval sentiment, instead of by the side of his father and mother at Windsor, young Edward was laid. Underneath a sumptuous "tombstone altar, all of one piece," with its excellent "workmanship of brass," they placed him. But the requiem was sung in the Tower. In the Abbey, the funeral service was that of the Reformed Church, the first ever used over an English sovereign. Day, Bishop of Chichester, preached the sermon; Cranmer administered the Holy Communion, and this was the last, as it was also the saddest, function of his public ministry which he was destined to perform. Four years later, Anne of Cleves, first Queen of Henry VIII., then Roman Catholic convert at Chelsea, was buried

in the Abbey; and one year later still, Mary herself was laid in her grandfather's chapel. Her obsequies were, with one exception, the last funeral solemnity of the Roman Church celebrated in the Abbey; that exception was the dirge and requiem ordered by Elizabeth a few days later for the Emperor, Charles V.

There was a strange contrast between the coronations of the two sisters. Mary, the country deemed illegitimate; the Privy Council hesitated before they acknowledged her, and it was only when she fell on her knees before them, imploring them to stand by her in her extreme necessity, that they were persuaded to accomplish her wishes. She made the passage from the Tower to Westminster in safety, but there was no enthusiasm. There had been a contest between the Queen and her ministers about the clause of the Coronation Oath, whereby she was required to maintain the independence of the English Church. The coronation itself was performed by Gardiner, Bishop of Winchester; the Archbishops of Canterbury and York, and the Bishop of London, being then prisoners in the Tower. The Queen, alarmed lest Henry VI.'s holy oil should have lost its virtue, had obtained a fresh supply, blessed by the Bishop of Arras. She feared, too, that the Scotch chair had been polluted by having been the seat of her Protestant brother, and she obtained another chair sent by the Pope. The Princess Elizabeth was present, and complained to the French ambassador of the weight of her coronet. "Have patience," said Noailles, "and before long you will exchange it for a crown." That time soon arrived, to the great joy of most Englishmen, or at least of most Londoners. When on issuing from the Tower (long her prison, and like to be her tomb) for the last time, she, after thanksgiving to the God who had delivered her, entered the city, all London was in a tumult of rejoicing. It was midwinter, yet there was no lack of flowers, and even paupers flung nosegays into her lap. There was one special feature which marked the contrast between the two coronations. At Cheap-side the Corporation gave Elizabeth an English Bible. She kissed it, thanked the city for their goodly gift, promised to read diligently therein, and then pass-

ed on amid cheers and blessings to the Palace at Westminster. The coronation proper took place on the following day, Sunday, January 15, 1559. For the last time the Abbot of Westminster officiated. The old ritual was for the most part observed, but the Litany was read in English, and the Gospel and the Epistle both in English and Latin. The Archbishop of York demurred to the innovation, and would take no part in the service; the See of Canterbury was vacant; the Bishop of London was in the Tower. Of the rest all the bishops save one refused to acknowledge the legitimacy of the Queen, and it was left for Oglethorpe, Bishop of Carlisle and Dean of the Chapel Royal, to officiate. He anointed her "Empress from the Orcade Isles unto the Mountains Pyrene." He is said to have died of remorse for performing an act which none of his episcopal brethren would do. Elizabeth destroyed the altars which Mary had erected in the Abbey. The fragments of them were removed to Henry VII.'s chapel, perhaps with the object of building out of them the tomb of the dead queen. But forty-five years passed before the memory of her unhappy reign would allow a word to indicate her sepulchre. Death united those who until death had been irreconcilable. The body of Elizabeth was brought from Richmond, where she died, to Westminster. The whole metropolis turned out to see the sad sight, and beheld it with "sighing, groaning, and weeping," the like of which had "not been seen or known in the memory of man." Her tomb was raised by her successor, who, though he bore little love to his mother's rival and executioner, was constrained by public sentiment to erect a worthy monument. Pictures of it were to be seen in every church—even in remote villages. The two lines at the head of the monument, inscribed by James I., display greater feeling than we should have expected from him. He wrote, "*Regno Consortes et urnâ, hic obdormimus Elizabetha et Maria sorores, in spe resurrectionis.*" Dean Stanley well says, "The long war of the English Reformation is closed in those words. The sisters are at one: the daughter of Catherine of Arragon and the daughter of Anne Boleyn rest in peace at last."

Mighty was the change which had come over Westminster since the day when Henry, setting at nought the decree of the Pope, had taken to wife the fair and frail mother of the "Virgin Queen." Abbot and bishop had disappeared for ever; their place was taken by the Dean, who is still the head of the Abbey. The Abbey itself, in the technical sense of the word, had vanished, and in its stead there was the collegiate church of St. Peter. The chapter-house became national property. The collegiate chapter of St. Stephen's hard by was suppressed, and in the first year of Edward VI. the House of Commons moved to the chapel which King Stephen had founded. Some of the Abbey estates were taken away to fill up the needs of the See of London, and the people said that this was "robbing Peter to pay Paul." The Abbey itself was scarcely saved from destruction. Its dependency, the Priory of St. Martin's-le-Grand, was torn to pieces, though a connection was until very lately maintained by the right which the Post Office Officials had to vote at elections for the City of Westminster. For a time the revolution was stayed. Mary restored the old worship and the old shrine; but Elizabeth completed what Edward had begun. The stone altars were everywhere destroyed. The great theological tournament which opened in the Abbey two months after her coronation, scarcely hastened the event, for the discomfiture of the Roman party had been determined beforehand. They objected, not without reason, to the arrangement by which they, the champions of the old religion, were ordered to take upon themselves the work of assailants, which properly belonged to their opponents, and by which they were denied the last word. They refused to discuss, and thereupon the Lord Keeper threatened them in these words: "Forasmuch as ye will not that we should hear you, you may perhaps hear shortly of us." They were not long in hearing. The new Liturgy and the Act of Uniformity were the first challenge that the new faith sent to the old. Feckenham, the Abbot of Westminster, in vain protested in the House of Lords. He was an honest and conscientious man, and when, as it is supposed, he was offered

the Archbishopric of Canterbury if he would conform to the Queen's pleasure, he absolutely refused, and submitted to be ejected from his abbey, and to be imprisoned or kept under surveillance for the rest of his life. It was spent in submission to the law, even while he adhered to his old creed, and, adorned with works of piety and charity, it was a life which Bishop Ken may have taken for his model. A portion of the old monastic buildings was occupied by the school since rendered so famous by the long line of scholars who have become illustrious in letters, science, arms, and statesmanship.

Hitherto we have traced age by age the history of England as it is set forth in the history of the Abbey. Henceforth one of the visible memorials of that close union fails us. Of the sovereigns that reigned after the Tudor dynasty came to an end, each cared too little for his predecessor to expend large sums of money on a royal monument. Nor did the affection of the people make up the deficiency in filial duty. There was a deeper feeling which also led to this apparent neglect.

"Princes were no longer, as they had been, the only rulers of the nation. With Elizabeth began the tombs of Poet's Corner; with Cromwell a new impetus was given to the tombs of warriors and statesmen; with William III. began the tombs of the leaders of Parliament. Other figures than those of kings began to occupy the public eye. Yet even as the monarchy, though shrunk, yet continued, so also the graves, though not the monuments of sovereigns—the tombs, if not of sovereigns, yet of royal personages—still keep up the shadow of the ancient practice."—*Memorials*, p. 174.

The plague which then raged in London prevented the coronation of James I. from being celebrated with any pageantry. Ben Jonson wrote an account of what would have taken place under happier auspices. All the bishops were present: a marked contrast to the scanty attendance at the last coronation. The King of the Scots once more sat on the Stone of Scone. Queen Anne, who was crowned at the same time, refused to receive the Eucharist, alleging that she had changed her Lutheran religion once before for the Presbyterian forms of Scotland, and that was enough. In the ritual, the words "whom we consecrate" were substituted for the old form "whom

we elect." The people did not notice the change then, nor indeed did they take public notice of it when King Charles was crowned with the same words. It was not until grounds of accusation were being sought on all hands in order to compass the ruin of Laud, that the archbishop was charged with having made the alteration. Charles's coronation was full of evil omens. Again there was no procession, nominally on account of the plague, but, as it was suspected, really because of the wish of "Baby Charles" to save the money for the Spanish war without the need of going to Parliament for supplies. There was a feud between the Dean, Williams, most celebrated of all the Abbey dignitaries, and Laud. The more powerful ecclesiastic gained the day, and Williams was not allowed to be present to receive the King. The left wing of the dove, mark of the Confessor's halcyon days, was broken. The text, "I will give thee a crown of life," selected by Senhouse, Bishop of Carlisle, for the sermon, was more fit for a funeral discourse. There was an earthquake during the ceremony; but most ominous of all, according to the popular belief, was the appearance of the King in a robe of white satin, instead of the usual purple velvet, a change that seemed to challenge all the misfortunes which tradition said were in store for the White King. The coronation scarcely excited so much interest as the wedding which preceded it. The marriage of Prince Charles had long kept the nation in a state of feverish excitement. The popular rejoicing at the failure of the proposed union with the Infanta of Spain was very great. Dean Williams, as Lord Keeper, and at that time King James's most trusted adviser, had favored the Spanish marriage; but when it was broken off, resolutely opposed the Duke of Buckingham's wish to go to war. Afterward, when the Prince was affianced to Henrietta of France, it fell to the Dean to feast the French ambassadors in the Jerusalem Chamber, and to conduct them to stalls in the Abbey. They entered at the north gate, which was, says Bishop Hackett—

"Stuck with flambeaux everywhere, both within and without the quire, that strangers might cast their eyes upon the stateliness of the church. At the door of the quire, the

Lord Keeper besought their lordships to go in and take their seats there for awhile, promising, on the word of a bishop (he was Bishop of Lincoln, as well as Dean of Westminster), that nothing of ill relish should be offered before them, which they accepted, and at their entrance the organ was touched by the best finger of the age, Mr. Orlando Gibbons. While a verse was plaid, the Lord Keeper presented the ambassadors and the rest of the noblest quality of their nation, with our liturgy, as it spake to them in their own language, and in the delivery of it used these few words, but pithy, 'that their lordships might at leisure read in that book in what form of holiness our Prince worshipped God. Wherein, he durst say, nothing savoured of any corruption of doctrine, much less of heresie, which he hoped would be so reported to the Lady Princess Henrietta.' The Lords Embassadors and their great train took up all the stalls, where they continued about half an hour, while the quiremen, vested in their rich copes, with their choristers, sang three several anthems with most exquisite relish before them. The most honourable and the meanest persons of the French all that time uncovered with great reverence, except that Secretary Villoclare alone kept on his hat."—*Hackett's Life of Archbishop Williams.*

In 1640 the Abbey had a narrow escape from destruction. Dean Stanley points out how much less destructive the Revolution was than the Reformation; yet while a mob rose to protect the Abbey against the Protector's covetousness in the time of Edward VI., in the reign of Charles I. a mob threatened to destroy the Abbey because of the extraordinary proceedings of Convocation, which had continued sitting while Parliament was forbidden to sit. Cromwell made short work of Convocation. As already stated, he was installed Protector, not in the Abbey, but in the Hall, and thither was brought the ancient chair of Scotland, and to him who sat therein was presented—first of English Sovereigns—a copy of the Scriptures. His funeral took place in the Abbey itself, and was more than royal in its magnificence. The sum expended was 60,000*l.*, more by one-half than was ever used at royal funerals. Three of his children had preceded him. He himself was laid at the east end of Henry VII.'s chapel. It was not long that he rested there. Of all the family, only one, Elizabeth Claypole, was allowed by restored royalty to intrude among the royal sepulchres. Cromwell, Ireton, and

Bradshaw were dug up, dragged to Tyburn, hanged, decapitated, and the bodies were buried under a gallows, and the heads set up over Westminster Hall. Charles II. was crowned amid great enthusiasm, and with elaborate and splendid ceremonial. Pepys witnessed the coronation. The regalia were all new. Archbishop Juxon—who twelve years before had stood not far off at a very different ceremony, which must have seemed to him the death of the monarchy as well as of the King—celebrated the resurrection of the monarchy by anointing that King's son. Two of the nobles quarrelled as to the right of carrying the insignia. The King's footmen and the Barons of the Cinque Ports not only quarrelled but fought for the canopy. Charles, who should have transported the body of his "Sacred Majesty," his father, from Windsor to Westminster, would not take the trouble to do so, nor spare for the purpose any of the money that he squandered upon his own pleasures. Instead of placing his father among the royal sepulchres, he laid there one after another of his illegitimate sons. Charles himself was, as Evelyn tells us, "very obscurely buried at night without any manner of pomp, and soon forgotten after all his vanity." He was laid at the east end of the north aisle of Henry VII.'s chapel. The great officers broke their staves over the grave as usual; but as the King had died in the Romish faith, it was found difficult to perform the more religious rites. They were wisely omitted.

James II. was crowned, as his brother had been, on the festival of the patron saint of England, St. George's Day, April 23, 1646. Macaulay has described the ceremony, and has told how the King, having received an estimate of its cost, determined to be profuse where he ought to have been frugal, and frugal where he ought to have been profuse, and how he spent 100,000*l.* in dressing his queen, and omitted the procession from the Tower. In James's case there was special reason why he should have kept the people in good humor by an imposing pageantry. Yet he sacrificed that which would have given exquisite gratification to a large part of the nation, in order to squander



the money thus saved upon an exhibition to which only three or four thousand privileged persons were admitted. Two significant events marked this coronation, one denoting the change which had already taken place, the other ominous of the change which was about to happen. James ordered Archbishop Sanicroft to abridge the ritual, ostensibly, because of its length, really, because of its theology; and so the Communion Office was omitted to suit the prejudices of the restorer of the mass. When James had been crowned, the crown tottered on his head, and Henry Sidney, keeper of the robes, held it up; it was not, he said, the first time that his family had supported the crown. Two years later, it was destined not only to totter, but to fall. James died, but was not buried with his father. Five hundred years had passed since an English king was buried in a foreign land. The last was Richard the Lion-hearted, who was laid in the Abbey at Fontevrault. The remains of James were escorted, in the dusk of the evening, by a slender retinue, to the chapel of the English Benedictines at Paris, and deposited there, as Macaulay tells us, "in the vain hope that at some future time they would be laid with kingly pomp at Westminster amongst the graves of the Plantagenets and the Tudors." Their ultimate resting-place was the church of St. Germain, and there a monument was erected to him by a descendant of the dynasty that had taken his throne.

It is a noteworthy fact, that though the legitimate line was set aside, and though the "Dutch usurper" seized the throne of the Stuarts, the crowning of William and Mary was the first occasion on which the coronation was sanctioned by Act of Parliament. The coronation oath was altered, and for the first time the English sovereign was called upon to swear that he would maintain the "Protestant religion as by law established." The procession from the Tower was abandoned, as it had been at the previous coronation. Though the royal *cortège* had to proceed merely from Whitehall to the Abbey, it was two hours late. The delay was caused by the alarming news, received that very morning, of the landing of James

in Ireland. At last the procession appeared.

"The tall Queen and the short King walked side by side, not as sovereigns consort, but as joint sovereigns, with the sword between them. For the first time a second chair of state was provided, which has since been habitually used for the queen consort. Into this chair Mary was lifted, girt with the sword, and invested with the symbols of sovereignty. The Princess Anne, who stood near, said, 'Madam, I pity your fatigue.' The Queen turned sharply, with the words, 'A crown, sister, is not so heavy as it seems.' Behind the altar rose for the first time the seats of the assembled Commons. . . . Amongst the gifts was presented the Bible, now and henceforward, as 'the most valuable thing that this world contains.' . . . There were, of course, bad omens observed by the Jacobites. The day was, for the first time, neither a Sunday nor a holy day; the King had no money for the accustomed offering of twenty guineas, and it was supplied by Danby. The way from the Palace to the Abbey was lined with Dutch soldiers. The medals had on their reverse a chariot which was interpreted to be that on which Tullia drove over her father's body."—*Memorials*, pp. 94, 95.

We need not describe Mary's funeral, which took place six years after her coronation. Macaulay has depicted, in one of his most graphic passages, the sad procession, and how, as it moved through the crowded streets, a few ghastly flakes of snow fell on the black plumes of the funeral car. Dean Stanley mentions that a robin-redbreast which had taken refuge in the Abbey was constantly on the hearse, and was looked upon with tender affection for its seeming love to the lamented queen. Seven years passed before her husband was received into the royal sepulchre. He was buried privately, at dead of night, as his rival had been half a year before; and he, one of the austere and most deserving and least loved of kings, was laid in the same vault as the most lax, almost the least deserving, and almost the best loved king, the second Charles, had been. Anne was carried from Whitehall to the Abbey, in consequence of an attack of gout. She received the homage of her husband, Prince George of Denmark, in the same form as that of the English nobles. The duties of the Lord Great Chamberlain were performed by the Duchess of Marlborough; her train was carried by Lady Mary Wortley Montagu.

"Anne's numerous progeny crowd the va-

cant vaults. Seven children dying in infancy, or stillborn, lie unmarked throughout the chapel. . . . She herself was buried in the vault beside her sister Mary, and her husband, Prince George of Denmark. Her unwieldy frame filled a coffin even larger than that of her gigantic spouse. An inquisitive antiquary went to see the vault before it was bricked up; it was full from side to side, and was then closed for ever amidst the indignant lamentations of the extinct dynasty."—*Memorials*, p. 183.

George I.'s coronation was viewed without much enthusiasm even by the adherents of the new dynasty. It was an awkward ceremonial. The arrangements had to be explained by the minister, who could not speak German, to the king, who could not speak English, in Latin, which they must both have spoken very imperfectly; hence the saying that "much bad language passed between them." George died abroad, and was buried at his German capital, which he loved so much better than his English. The coronation of George II. was as splendid as that of his father had been the reverse. Queen Caroline was one mass of jewels: on her head she wore all the pearls she could borrow from fine ladies; on her petticoat all the diamonds she could hire of Jews. The people who had cared so little about the crowning of the father that seats in the line of procession fetched only half-a-guinea, gladly gave ten guineas to witness the coronation procession of the son. The Queen was sincerely mourned; there was no courtly exaggeration in the words of the funeral anthem, "When the ear heard her, then it blessed her," which were sung for the first time to Handel's music when she was laid in the grave. More than twenty years passed before the King followed her; but, in spite of all his faults, he was so far faithful to her memory that he gave directions for his remains to be mingled with those of his wife. Accordingly, the coffins were placed in a large stone sarcophagus, and one side of each of them was withdrawn. Horace Walpole witnessed and has described, this, the last of the royal burials in the Abbey. He witnessed and described also the coronation of George III., and, *blasé* though he was by that time, he said, "Tis even a more gorgeous sight than I imagined." There were a few minor *contretemps*; though

nothing that could seriously impair the pleasure which the nation felt in beholding once more a British-born king, who, moreover, gloried in his birth. There was one witness of the ceremony, who of all men must have been least expected, Prince Charles Edward. Were the grapes too high, that he called them sour—that he said to one who recognized him, "I assure you that the person who is the cause of all this pomp and magnificence is the man I least envy"? Walter Scott has described, in the *Gentleman's Magazine*, the splendor of George IV.'s coronation. No splendor, however, could atone in the eyes of the people for the insult to the unhappy Caroline. A few weeks after that pageant, there was another, and a very different one. The body of the dead Queen was carried through the streets of London, amid a popular tumult that threatened serious consequences.

"As George IV. had conciliated the popular favor by the splendor of his coronation, so, in the impending tempests of reform agitation, William IV. endeavored to do the like by the reverse process. A question was even raised, both by the King in correspondence with his ministers, and by a peer in the House of Lords, whether the coronation might not be dispensed with. There was no procession, and the banquet was for the first time omitted. . . . The last coronation, doubtless, still lives in the recollection of all who witnessed it. They will remember the early summer morning, when, at break of day, the streets were thronged, and the vast city awoke; the first sight of the Abbey, crowded with the mass of gorgeous spectators, themselves a pageant; the electric shock through the whole mass, when the first gun announced that the Queen was on her way; and the thrill of expectation with which the iron rails seemed to tremble in the hands of the spectators as the long procession, with the entrance of the small figure, marked out from all beside by the royal train and attendants, floating like a crimson and silvery cloud behind her at the moment when she first came within full view of the Abbey, and paused, as if for breath, with clasped hands; as she moved on to her place by the altar, as, in the deep silence of the vast multitude, the tremulous voice of Archbishop Howley could be faintly heard, even to the remotest corners of the choir, asking for the recognition, as she sat immovable on the throne, when the crown touched her head, amidst shout and trumpet, and the roar of the cannon, there must have been many who felt the hope that the loyalty which had waxed cold in the pre-

ceding reigns would once more revive in a more serious form than it had, perhaps, ever worn before."—*Memorials*, pp. 104, 105.

The Abbey will still continue for generations to serve as the place in which our sovereigns are crowned; but it seems to have ceased for ever to be their place of sepulture. George III. was buried at Windsor, where his Cordelia—the Princess Amelia—had been buried, three years before the hope of the nation, the Princess Charlotte, had been laid within St. George's Chapel. Such universal mourning had scarcely been seen since the death of the Confessor. It has been almost equalled within the present decade. Who can doubt where Victoria will lie when the time comes for her to rejoin the husband for whom she has built the most gorgeous sepulchre ever reared in England?

It is with unfeigned regret that we find ourselves compelled to pass by the other matters which Dean Stanley has so ably treated in his *Memorials*. We have considered the Abbey as "petrified history," and traced its erection from the day when its foundation was laid in the *locus terribilis* of Thorn-Ey to this present time, when the engineer is boring his underground railway beneath the Abbey precincts. But English history is not confined to the coronations and the burials of English sovereigns. England owes more to her warriors, her poets, her statesmen, than to her kings. Lack of space alone prevents us from speaking of all the other monuments—the monuments of warriors, from Louis Robsart, who bore the standard at Agincourt, down to Clyde, who reconquered India; of poets, from Chaucer, the father of English poetry, down to Keble, the sweet psalmist of Hursley; of statesmen, from John of Waltham, politician, lawyer, and bishop, down to Palmerston, the most popular of ministers at home, and perhaps the most feared abroad; of men of letters, from Waldeby, tutor of Richard II., down to Thackeray, chief of English novelists; of divines, from Twiss, Marshal, and Strong, the famous Presbyterian preachers, down to Isaac Watts, whose monument "commemorates at once the increasing culture of the Nonconformists and the Christian liberality of the Church of England;" of men of science, from him of whom it is written—

"Nature and Nature's laws lay hid in night.  
God said, *Let Newton be!*—and all was light,"

down to that group where—

"Close to the geographer Rennel, in the centre of the nave, lie Telford, the famous builder of bridges, and Robert Stephenson, who 'had during his life expressed a wish that his body should be laid near that of Telford; and the son of the Killingworth engineer thus sleeps by the side of the son of the Eskdale shepherd;' and over their graves the light falls through stained glass windows, erected in memory of their brethren in the same art—Locke and Brunel."—*Memorials*, p. 319.

We can but notice the catholicity of the Abbey. It is in one what the three cathedrals of the Kremlin are at Moscow; it is at once what the Santa Croce of Florence is to Italy; what the Walhalla of Ratisbon is to Germany.

"The Kings of France rest almost alone at St. Denis. The Kings of Spain, the Emperors of Austria, the Czars of Russia, rest absolutely alone in the vaults of the Escorial, of Vienna, of Moscow, and St. Petersburg. But it has been the peculiar privilege of the Kings of England that neither in life nor in death have they been parted from their people. As the council of the nation and the courts of law have passed into the Palace of Westminster, and engirdled the very throne itself, so the ashes of the great citizens of England have passed into the sepulchre of the kings, and surrounded them as with a guard of honor after death. On the tomb designed for Maximilian at Innsprück, the emperor's effigy lies encircled by the mail figures of ancient chivalry—of Arthur and Clovis, of Rudolph and Cunegunda, of Ferdinand and Isabella. A like thought, but yet nobler, is that which is in fact realized in the very structure of Westminster Abbey, as it is in the very structure of the English constitution. Let those who are inclined bitterly to contrast the placid dignity of our recumbent kings, with Chatham gesticulating from the northern transept, or Pitt from the western door, or Shake-peare leaning on his column in Poet's Corner, or Wolfe expiring by the Chapel of St. John, look upon them as in their different ways keeping guard over the shrine of our monarchy and our laws—and that which seems at first incongruous will become a symbol of the harmonious diversity in unity which pervades our whole commonwealth. Had the Abbey of St. Denys admitted within its walls the poets, and warriors, and statesmen of France, the kings might yet have remained inviolate in their graves. Had the monarchy of France connected itself with the great institutions of Church and State, assuredly it would not have fallen as it did in its

imperial isolation. Let us accept the omen for the Abbey of Westminster—let us accept it also for the Throne and State of England."—*Memorials*, pp. 193, 194.

We must pass by, too, the illustrious men who have ruled in the Abbey from the Abbot Edwin to the accomplished Dean whose *Memorials* we have reviewed. They have been a fair sample of the Church—the net which gathers in bad and good. There have been covetous men, like Berkyng; sensualists, like Peter of Lewisham; stern disciplinarians, like Simeon Langham; conspirators, like William of Colchester; men of peace, like Islip; men of feeble mind, like Thirby; men of strong convictions and conscientious self-sacrifice, like Feckenham; devout men, like Andrewes; brilliant men, like Williams; orators and men of the world, like Atterbury; men of science, like Buckland; and accomplished scholars, like Stanley. Nor can we take note of all the buildings attached to the Abbey: some like the Jerusalem Chamber, intimately bound up with the theological history of the country; others, like the Treasury, closely connected with its secular life. Let us conclude this incomplete survey in the noble words of the historian of this noble building:—

"By the silent nurture of individual souls which have found rest in its services; by the devotions of those who in former times—it may be in much ignorance—have had their faith kindled by dubious shrine or relic; or in after years caught here the impassioned words of Baxter and Owen; or through succeeding ages have drunk in the strength of our own Liturgy, in the cycle of the Christian year; by these, and such as these, we may almost say, through all the changes of language and government, this giant fabric has been sustained, when the leaders of the ecclesiastical or political world would have let it pass away. It was the hope of the founder, and the belief of his age, that on St. Peter's Isle of Thorns was planted a ladder, on which angels might be seen ascending and descending from the courts of heaven. What is fantastically expressed in that fond dream has a solid foundation in the brief words in which the most majestic of English divines has described the nature of Christian worship. 'What,' he says, 'is the assembling of the Church to learn, but the receiving of angels descended from above—what to pray, but the ascending of angels upward? His heavenly inspirations and our holy desires are so many angels of intercourse and commerce between God and us. As teaching bringeth us

to know that God is our supreme Truth, so prayer testifieth that we acknowledge Him as our sovereign good.' Such a description of the purpose of the Abbey, when understood at once in its fullness and simplicity, is, we may humbly trust, not a mere delusion. Not, surely, in vain did the architects of successive generations raise this consecrated edifice in its vast and delicate proportions, more keenly appreciated in this our day than in any other since it first was built, designed, if ever were any forms on earth, to lift the soul heavenward to things unseen. Not, surely, in vain has our English language grown to meet the highest ends of devotion with a force which the rude native dialect or the barbaric Latin of the Confessor's age could never attain. Not, surely, for idle waste has a whole world of sacred music been created, which no ear of Norman or Plantagenet ever heard, nor skill of Saxon harper or Celtic minstrel ever conceived. Not, surely, for nothing has the knowledge of the will of God almost steadily increased century by century, through the better understanding of the Bible, of history, and of nature. Not in vain, surely, has the heart of man kept its freshness whilst the world has been waxing old, and the most restless and inquiring intellects have clung to the belief that the everlasting arms are still beneath us, and that 'prayer is the potent inner supplement of noble outward life.' Here, if anywhere, the Christian worship of England may labor to meet with the strength and the weakness of succeeding ages, to inspire new meaning into ancient forms, and embrace within itself each rising aspiration after truth, and justice, and love. So considered, so used, the Abbey of Westminster may become more and more a witness to that one sovereign good, to that one supreme truth—a shadow of a great rock in a weary land, a haven of rest in this tumultuous world, a breakwater for the waves upon waves of human hearts and souls which beat unceasingly around its island shores."—*Memorials*, pp. 487, 488.

Belgravia.

#### "BEAUTIFUL FOR EVER."

WHAT are we to say about the propriety of painting the skin? The subject is one that would soon lead the inquiring mind into troubled waters; or, if the figure of speech be thought unfitting, would lead it to troublesome issues. A lady about to paint, or varnish, or enamel herself, has first, if she be wise, to consider the matter from a hygienic or health-diposing point of view. She has to consider what the skin is, what it has to do, and how the interior economy



may resent any violation done to this delicate expansion. Having decided to rouge upon a white ground, she has to consider what the white ground shall be, and what the pink to be laid upon it. Ah, ladies, you do not think of these matters—you never *will* think of these matters! The perfumer, then, must do it for you, as he does for the most part conscientiously. The white pigments used for skin-purposes at the present time are commonly harmless; time was when a verdict so favorable could not have been given. As for rouge, the best is a preparation, by a treatment unnecessary to state here, from the *coccus cacti*, or cochineal insect; an inferior sort is got from safflower, the petals of a flower used in dyeing. White skin-pigments usually go under the name of "pearl-powder;" though the composition of none of them has anything to do with pearls, and though—so-called—pearl-powders differ extremely in their nature. I shall treat of their composition by and by; pausing now to note the troubled waters, or troublous issues, as may seem the trope most fitting, to which I adverted. If skin-powder cosmetics are indeed harmless, as those now used mostly are, then what troubles are we to encounter? Moral troubles—conscience troubles, ladies fair. You know what opinions some people hold in respect to what they call vanity. You know how sinful it is in the estimation of some people to tint the skin. Would you wish me—a man liking peace and quiet—to pronounce opinions on this point, to state whether I approve of skin-painting, regarded from a moral point of view, or disapprove of it? Goodness, no! I hate argument. The morality of the thing, ladies, pray settle among yourselves. Still, perhaps some people may accede to a few general propositions; the first being that any lady whose complexion is good already had better let well alone. It is not within the competence of any art to give the delicate tints which mantle upon a really beautiful female skin. My advice to ladies having delicate complexions, and valuing the gift, would be to keep their complexions good by observance of certain points of discipline. Early hours, not too much dancing, distilled water for the toilet, and low alkalized soap; if soap for the

face, any alkali will do much. If asked to specify the greatest enemy to the duration of a lady's complexion, I would state the London season; recurring again and again, with all its hard work, its mental anxieties, and general rigor. Yet there will be London seasons many, despite my vaticinations; and belles must disport themselves in hot drawing-rooms, and eat ices after the ball's warm glow; and turn night into day. They must do all this and more; all not conducive to good health, and hence not to the maintenance of the highest ideal of skin-beauty. Wherefore, after a certain age, I suppose skin-pigments there must be, as there always have been.

There was a time when the chemical nature of things was not so well known as to-day; when the creamy whiteness of flake-white—none other than superior white-lead—entered into the composition of pearl-powders. I need not pause to reprobate the awful danger of employing this material for such a purpose, seeing that the employment is abandoned. Subsequently to the going out of white-lead as face or pearl-powder, another metallic preparation—the trisnitate of bismuth—came in. It is not so decidedly poisonous as a lead compound, but it is poisonous enough to prove injurious to the skin; indeed, I know not of any metallic pigment so innocent that it can be laid on the skin continuously without incurring serious damage. Such pigments mar the beauty of the skin at least, perhaps lead to evil constitutional effects through absorption. Even if white-lead and trisnitate of bismuth were not injurious to the skin and poisonous generally, their use as skin-pigments would be attended with a great disadvantage. They both turn black under the influence of sulphuretted hydrogen—a gas which in small quantities exists pretty largely diffused. The effect of bringing concentrated sulphuretted hydrogen in contact with skin whitened by a lead or bismuth preparation would be to turn the skin suddenly black. Under the usual circumstances of society, no such extreme issue as utter blackness need be contemplated; but a certain darkening of color would rapidly ensue, destroying the harmony of the work of art perfected with so much care—dissipating the illusion of a

beautiful complexion. The tale is recorded in books of a certain lady who had been whitening her skin with tris-nitrate of bismuth—magistery of bismuth our grandmamas and grandpapas called it—and who chanced to bathe whilst whitened thus in the Harrogate waters. Harrogate is celebrated for its sulphurous springs. The water of these springs holds sulphuretted hydrogen dissolved. If it be a fact that the lady in question went into a Harrogate bath of sulphurous water whilst skinned with bismuth magistery, then it must have come true what the tale records, viz., that she in one instant turned as black, wherever the pigment was laid on, as any Ethiop. Pearl-powders, as now used, are variously made. Some are nothing else than powdered talc or French chalk; others a mixture of the same with common chalk; a third order contains starch-grains mingled with the preceding one, or both. By starch-grains I would be meant to signify the preparation known as "violet-powder," which really has no more to do with violets than it has with cabbages or cucumbers; being really nothing else than starch-grains odorized by orris-root—*iris florentina*, sweet-smelling iris—a root that smells not unlike violets. Much discrimination is used by perfumers in selecting a proper sort of starch-grain. Whencesoever starch comes, it has the general characteristic of being in grains. These are readily made manifest under microscopic examination, and are then found to be different, not merely as to size, but as to shape. Hence it is that the investigator can tell whether one kind of starch be mingled or adulterated with another. For example, arrowroot—genuine arrowroot—is starch obtained from the *Maranta arundinacea*. It happens to have an agreeable taste, and hence is so valuable for dietetic uses. It is more expensive than the starch of wheat or of potatoes; than starch indeed generally, and hence it is often contaminated. Now the grains of wheaten starch happen to be large and coarse; hence the material, although it will do very well for hair-powder, is not satisfactory when used as a complexion-powder; the grains are too staring. Horse-chestnut starch has been much employed for this purpose; so in like manner the starch of ordinary

chestnuts; in short, perfumers have, or pretend to have, each a specialty. Nothing whatever can be alleged against the use of any starch pure and simple when used for toilet purposes; on the contrary, it imparts a softness and freshness both salutary and delightful. Violet-powder so-called, indeed, hardly comes under the definition of a cosmetic. When made up with other ingredients to constitute the so-called pearl-powder, is it injurious then? That will depend on the character of the materials with which it is compounded. On white-lead we have already pronounced. It may well be called fatal; not only to beauty, but in certain cases to life also, and to health in all cases.

In ordinary domestic usage, thus to write, in the ordinary employment of skin-cosmetics by ladies themselves, violet-powder, the so-called pearl-powder, and rouge, usually complete the list. When female charms have so much waned that higher artistic resources are needed, or thought to be needed, then the case is one for out-of-door practice. Then come the operations of enamelling and blue-veining,—operations that are kept a secret, but in performing which the chemist, if he so pleased, could beat the professed artists who make ladies "beautiful for ever" out of the field. I have already adverted to collodion as being a material that may be used to give the appearance of artificial skin, and I have indicated some limitations to its employment. As then stated, I have no doubt that a human individual, man or woman, might be killed by the laying on of an investiture of collodion all over the body. Death would be induced by occluding the cutaneous pores, checking exhalation, perspiration, and skin-respiration. It does not thence follow, however, that a layer of collodion may not be deposited over limited surfaces of the skin with impunity, nay in some cases with advantage. Suppose, for instance, that a finger has been cut or scalded, and the cuticle removed. The immediate injury may not be grave, but it becomes irritating through collateral circumstances. Not only does the part look ugly—something to be regarded in a pretty hand—but every touch of salt, vinegar, soap, and a thousand other things that might be mentioned, and that

we are obliged to touch, induce and keep up a troublesome irritation. The wound thus perpetually worried, so to speak, gets worse and worse, and all for want of covering. In such a case, collodion is a real boon. I mean true collodion, or solution of gun-cotton in ether. There is a spurious collodion, which is made by dissolving gutta-percha, the effect of which is by no means so good.

The use that might be made of collodion for cosmetic purposes happened to be brought under my notice casually during my medical attendance on a case in my own practice. A blister having been applied to the chest of a girl whilst in the condition known to physicians as that of anæmia, or deficient blood, the blistered part, instead of healing kindly, as it should have done, mortified. The patient being supported by administration of stimulants, the mortified part in time came away, leaving a frightful wound extending all over the chest, and up into the visible part of the neck. At a certain stage of treatment collodion was had recourse to, for encroaching on this wound around the edges,—imparting a ring of artificial skin, in point of fact. The practice had no reference to beauty at that time, but I could not fail to be struck with the beauty of the work in addition to its surgical efficacy. Wherever the collodion had deposited and dried, there was not only a protective surface, but a very satisfactory-looking skin,—a little too white and glazed for nature, but yet satisfactory. When my patient got better, and wished to appear in society, the suggestion came from her that I would perform the office of Madame Rachel,—that I would enamel her neck, and make it presentable. I did my best, and for one who took up extemporaneously a new art, the success was encouraging. With the artificial skin to begin upon, touched up with now a rub, now a stipple, of rouge and pearl-powder, and finished off with violet-powder, I turned out a work of art beautiful to look at from afar, and not contemptible on nearer scrutiny. Having no intention to devote myself to this branch of practice for my own immediate emolument, and as little intending to patent the process, whereby I might acquire wealth in an indirect way, it would be a useless and a churlish thing for me to hide my know-

ledge under a bushel, I throw it open for the benefit of science, of beauty, and Madame Rachel. To one conclusion I have come, *videlicet*, the real artistic want I felt was the absence of those short downy hairs which, growing all over the skin, impart a look of such delicacy and softness. The absence of this down is very conspicuous on a waxwork presentment of the human face divine. Anybody with artistic eye, having gazed on a waxwork, even the most admirably finished, must have been struck with a certain ghastly unreality; he perhaps knows not what or why. It may seem strange that it should be, yet so it is. The defect can hardly be due to that merely explicable on the assumption of imperfect coloring; it must be referred to a deeper source. It comes of this, namely, the wax surface is wholly devoid of those small hairs—of that soft down; hence the unreality. Now to the point. Whenever—if ever, and perhaps it will be sooner than I think—whenever some artist in female-charm rejuvenation, commencing where I left off, takes up this collodionizing treatment of the fair, I counsel him or her to devise some means of imparting the much-desiderated downy finish. I think it could be effected in the same way that the manufacture of plush-enamelled paper is effected. This, however, is a point to be investigated by anyone who, profiting by the indications herein set down, may think proper to work out the process to his or her own profit.

Consideration of the skin naturally leads on to the hair and nails, between both which and the cuticle there is a close similarity. The hair claims priority in a cosmetic sense. What can be more beautiful than it, when copious, soft, and delicately tended? what more hateful, more destructive of the charm of loveliness, when allowed to degenerate into savagery by some inappropriate treatment? A hair consists of three parts—the root, which is fixed in the skin, the shaft or stem, and the point. The usual shape of the stem is a cylinder; it may be flattened, or even grooved. Hair, we all know, varies extremely as to size. What a difference, for example, between the whiskers of a cat and the hairs of the sleek coat of her tiny victim! Even for one and the same species, and

one and the same part of growth, there may be much variety as to the fineness of hair, as the human head exemplifies. As to the further structure of hairs, it is more complex than those people may imagine who abuse it by hair-dye so remorselessly. The stem of each hair is covered with a coating of scales overlapping each other like those on the skin of a fish. Hence comes the property of felting, which only consists in beating a layer of hairs, laid upon a flat surface, sharply until they interlace and hold tight one to the other, held by their rough external surfaces. Inside this scaly covering comes a fibrous substance, making up the chief part of the stem; and in the very middle of it, running like a streak of elder-pith along a branch, is often a sort of marrow. This central pith, however, does not exist in all hairs. It is wanting in the fine hairs over the general surface of the body, and is not commonly met with in those of the head. The special pigment that constitutes the difference of color between different hairs resides in this pith when present, also in the fibrous matter. We now come to the hair-root. It is lighter in color and softer than the stem, swelling out at its lower end into a bulbous knot lying in a special recess called the hair-follicle, which may reach down to the subadjacent fat. It is known that women more rarely grow bald than men, and it is accounted for by the circumstance that women have more fat underneath their head-skin, thus furnishing a richer soil, so to speak, for the feminine tresses to spring from. Usually hair is wholly devoid of sensation, else it would go hard with us when we submit to hair-cutting. There is a certain disease, however, not unusual in Poland, and known as the *plica polonica*, the characteristic of which is that the hair grows sensitive, and when cut bleeds even dangerously. Some physiologists have entertained the belief, that from the insertion of each hair-filament to its extremity a fluid passes, and thence back again. The reality of this circulation, however, has not been demonstrated. The diverse color of various heads of hair is referable, as we have seen, to the presence of special coloring-matters. Hence it follows that if such coloring-matters be absent, the remaining hair is white. Narrations

abound of the hair having turned white suddenly after some shock, or fright, or other violent mental emotion. No satisfactory explanation of this has ever been offered, and some physiologists deny the fact wholly. Among the number of these must be mentioned Dr. Davy, who, some years ago (1861), read a paper on the subject at the British Association. It is his opinion that hair never turns gray save under the influence of impaired health, or of age. Much study is popularly considered to turn the hair gray, and long-continued anxiety. The imputation is doubtless true; but then the immediate cause of grayness may still be the impaired health. Haller, in his *Elementa Physiologie*, discusses the evidence for and against the sudden change of hair to gray exhaustively. He refers to eight authorities for proof of such a change, but, finally summing-up the evidence on behalf of himself, he comes to the same conclusion as Dr. Davy. Those who adopt the popular opinion fortify their argument by referring to the color-mutations certain animals and birds undergo with change of season. Mountain-hares and ermines, *ex. gr.*, acquire white fur towards winter. In like manner so do lemmings. Mr. Blyth the naturalist examined a lemming that was just undergoing this change, and satisfied himself that the whiteness was referable to special new hairs, not to defect in coloring-matter of the hairs previously growing. For my own part, I confess to a leaning toward the popular belief. If the sudden change of hair from dark to gray be not a fact, I am at a loss to account for the belief to the contrary, which is almost universal, having found expression in the traditions and the poetry of so many nations. Of far higher value than any expression of credence on my part is the testimony of the celebrated skin and hair physiologist and practitioner, Mr. Erasmus Wilson, who has no hesitation in giving credence to the popular belief.

Still, doubtless many of the instances of such change that have found their way into history and narrative are otherwise explicable. Thus, for example, history attests the sudden change of Marie Antoinette's hair from black to gray after her imprisonment. As to this, there now exists little doubt, I be-



lieve, that the unfortunate queen's hair had become gray before her imprisonment, but that she darkened it assiduously by some sort of hair-dye. When imprisoned she could no longer obtain this hair-dye: hence the natural gray color of her tresses became apparent. The same explanation awaits the conspirator Orsini, who was executed at Paris some years ago. When he went to the scaffold his hair and beard were gray; when he went into prison they were black. It is well established that Orsini had been in the habit of using hair-dyes. Were it not thus made out, his would be cited amongst the instances corroborative of the popular opinion.

Though the hair be wholly devoid of feeling, it is not devoid of life, and soon resents any discipline founded on the treatment of it as mere dead filaments. It cannot be pinched with hot irons, or crinkled in and out a waver, without causing speedy deterioration; as many ladies have, when too late, discovered to their cost. No style of hair-dressing is so congenial to its well-being as that of arranging it in plain bands. Curling, in whatever way conducted, is injurious; curling by hot irons most injurious of all. Far more prejudicial, however, are some of these crinkling and waving operations, which unfortunately have become fashionable. They are only second in evil to certain operations of dyeing, and, still worse, bleaching, which will be noticed further on. English curls—*boucles Anglaises*—have acquired a civilized-world-wide celebrity. The former predilection of English ladies for ringlets is not to be considered a matter of taste alone, this style of hair-dressing being peculiarly appropriate to English hair and the English climate. Our fair sex are not celebrated for the profusion of their hair,—in that respect there is hardly a peasant-girl of France, Italy, Spain, or Germany that would not have the advantage; but English ladies' hair is usually of admirable quality—soft and silky,—a condition indispensable to the formation and maintenance of pleasing ringlets. Hair may be easily too long for this style of adornment: foreign women's hair is usually too long. Moreover, the moisture of the English climate promotes just that degree of rigidity in the helix twist which is in-

dispensable to beauty. Mostly, when a continental lady emulates the *boucles Anglaises*, the result is not satisfactory. The ringlets are prone to assume a certain corkscrew aspect,—hard, and the reverse of pleasing.

Coming now to the discipline of the hair, the method or methods of keeping it in order, I believe the more it feels the touch of the atmospheric air the better for its condition. The magnificent masses of hair to be seen on the heads of foreign peasant-girls, who never wear bonnets or other head-covering, is a standing proof of the soundness of the doctrine. Conversely, again, who can have failed to remark the tendency to baldness which any persistent covering of the head induces? Look at barristers—men whom precedent and tradition compel to smother their pericranium in an investiture of powdered horse-hair—see how bald they tend to be, or how bald they mostly are. I would advise a barrister entering his profession with a good head of hair, to have it powdered and got up horsehair-wig fashion. Is there any cure for baldness when it has become confirmed? Are those elixirs, those balms of Gilead, those rosemary essences, and other things of which hair-dressers talk to one about in such bland persuasive tones,—are they a fact or a delusion? And what shall we say about bear's-grease, that was once held in such repute, and the hair-producing character of which still lingers, as did the odor of flowers to Tommy Moore's broken vase? Delusions all, I fear, or at any rate mostly. Consideration of the structure and anatomy of individual hairs will prompt to this conclusion, and experience, I think, confirm it. Each hair, as I have already explained, springs from a bulb, and each hair-bulb is naturally bedded in its own socket. The arrangement is one very comparable to that of a tooth in its jaw-socket and membranous investiture. If a hair be broken off, or if, growing weak from one of many causes, it withers down, leaving the root behind, then doubtless much may be done to effect restoration by proper treatment; but if the bulb has wholly gone, and the skin once closed up, then one might as well expect to grow a new tooth from the gap whence a tooth had been extracted,

as to evolve from that particular bulb-socket a new hair. The only effectual way I know of whereby to impart a new head of hair to a pericranium upon which the blight of actual alopecia has fallen, is that of transplantation. It is a perfectly established fact that hairs can be transplanted from one head to another, and that when thus transplanted they will grow. I say nothing about the pain such an operation would cause—that is a matter to be reflected on by the patient. In like manner, feathers and teeth will grow if similarly transplanted. The experiment was tried, and succeeded, of transplanting a tooth to the comb of a cock. These physiological facts are suggestive of much cranial artistic beauty, whenever fashion may prompt individuals to incur the pain of its infliction. One can readily imagine the imposing beauty that would come of adorning human heads with birds' feathers. It would be some sort of triumph for a lady to boast that she grew her own ostrich-plumes; and it would not be difficult for men of the law to set off their natural bald pates with such a resemblance of the conventional horsehair-wig idealized as might satisfy the punctilio of the most exacting judge. I have dealt with the proposition, seeing that it comes naturally developed out of the postulate hereinbefore set down. As this thesis is intended to be practical,—intended for the present, moreover, not for posterity,—it would be hardly worth while to bestow more thought on an expedient that, whatever its demonstrable feasibility, is one for the adoption of which people are not yet prepared.

When hairs have withered away down to their respective bulbs, their growth can be promoted by certain applications. Among these, cantharides, or Spanish flies, have acquired a celebrity which upon the whole may be pronounced merited. Cantharidine, however, in all its various states, is so powerful an agent that the employment of it should never be trusted to the discretion of a hair-dresser. Pernitrate of mercury is another agent that has grown into repute for the same purpose. This also, however, is dangerous when used too strong, and its degree of concentration can only be judged of in respect to each particu-

lar case. The repute acquired by bear's-grease for strengthening the hair, and even overcoming alopecia, is wholly unfounded. Bear's-grease first came into vogue through application of what is called the doctrine of signatures, whereby it was, in one stage of medical belief, inferred that each particular agent used, or capable of being used, gave evidence by external sign of inward potentiality. Thus inasmuch as bears were seen to grow a strong coat of hair, the signature was adopted as foundation for the belief that any scalp to which bear's-grease might be applied should forthwith produce hair in true ursine fashion.

Very conducive to the well-being of hair is assiduous removal of the small cutaneous scales that invest every inch of the skin it grows upon. Brushing accomplishes this well, and the mild friction of the brush is also advantageous by stimulating a proper supply of blood towards the hair-roots. Let no one be led away by the notion that so-called magnetic brushes are of special use. Magnetic brushes are like any ordinary brushes, in effect neither better nor worse. True, indeed, each of these magnetic brushes has a magnet fixed into its reverse; but any person acquainted with magnetism will feel assured that the conditions of arrangement are altogether incompatible with the exercise of any magnetic influence.

Beyond combing and brushing, what are the best expedients for hair-cleaning? In man there is nothing so good as soap-and-water lather; but the plan cannot be recommended for ladies. The alkali of soap is not congenial to the gloss and beauty of human hair; moreover, to some extent, alkaline contact affects the coloring-matter, and changes its tint. Men are above or beside these considerations, but they should be taken heed of by ladies. Glycerine and lime-juice so called is not glycerine and lime-juice at all. It is merely scented oil and lime-water. Glycerine and rose-water is much better. The advantage of glycerine is, that it imparts to the hair a soft, silky brilliancy; the so-called brilliantine, in point of fact, which gentlemen—vain young ones—use for their whiskers and moustaches is only glycerine scented. For bandoline, noth-

ing is better—perhaps nothing so good—as a very small fragment of gum-tragacanth dissolved in water and perfumed. The fragment must be *very* small, otherwise the solution will turn the *accroche-cœur* into a veritable horn, as uncomfortable to wear as ungraceful to look at. People who use pomades should be very careful that they do not apply injurious coloring-matters to the hair. The fashion these some years past has come in of using yellow or straw-colored pomades. They are elegant to look at, and so long as the yellow tint is imparted by palm-oil, as it should be, they are, sanitarily considered, unobjectionable. I fear, however, that in many instances the peculiar tint of yellow so much desiderated is given by incorporation with some injurious metallic compound. Roseate pomades are never, on account of their coloring-matter, objectionable, the tint being always imparted by alkanet root, which is wholly innocuous. In respect to the oleaginous composition of pomades, that varies greatly. Spermaceti, and almost any animal oil or fat—except mutton-fat—may be employed in their composition. I believe the very best oleaginous hair-application consists of a mixture of castor-oil and alcohol, two parts by measure of the former to one of the latter, the whole perfumed according to taste. The circumstance should here be mentioned that castor-oil is the only oil admitting of this treatment; if, for example, it were attempted to combine olive-oil with alcohol, the operator would soon find he had taken trouble in vain. Between the two no union would ensue; and the same remark applies to every oil, with the exception of castor-oil.

The hair of human beings, as well as of animals, holds sulphur in its composition, and retains this element obstinately. Thus, if a scrap of flannel a thousand times, or even ten thousand times, washed be taken and analyzed for sulphur, this element will invariably be found. As will be seen hereafter, the theory of the action of a certain class of hair-dyes turns upon this sulphurous presence. It is a property of sulphur—and more especially of a certain sulphur—containing gas—to turn several metallic combinations black. Lead is one of the metals in this category, and

accordingly lead has formed the basis of more than one hair-dye. Bismuth is another of these metals, and silver another; the blackening function of silver salts, however, when used as hair-dyes, is not wholly referable to this sulphurous reaction. The practice of hair-bleaching and hair dyeing will, however, receive careful and systematic treatment upon an early occasion.

J. SCOFFERN, M.B.

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The Saturday Review.

#### LA FEMME PASSÉE.

WITHOUT doubt it is a time of trial to all women, more or less painful according to individual disposition, when they first begin to grow old and lose their good looks. Youth and beauty make up so much of their personal value, so much of their natural *raison d'être*, that when these are gone many feel as if their whole career was at an end, and as if nothing was left to them now that they are no longer young enough to be loved as girls are loved, or pretty enough to be admired as once they were admired. For women of a certain position have so little wholesome occupation, and so little ambition for anything, save indeed that miserable thing called “getting on in society,” that they cannot change their way of life with advancing years; they do not attempt to find interest in things outside themselves, and independent of the mere personal attractiveness which in youth constituted their whole pleasure of existence. This is essentially the case with fashionable women, who have staked their all on appearance, and to whom good looks are of more account than noble deeds; and, accordingly, the struggle to remain young is a frantic one with them, and as degrading as it is frantic. With the ideal woman of middle age—that pleasant woman, with her happy face and softened manner, who unites the charms of both epochs, retaining the ready responsiveness of youth while adding the wider sympathies of experience—with her there has never been any such struggle to make herself an anachronism. Consequently she remains beautiful to the last, far more beautiful than all the pastes and washes in Madame Rachel's shop could make her. Sometimes, if rarely in these latter

days, we meet her in society, where she carries with her an atmosphere of her own—an atmosphere of honest, wholesome truth and love, which makes every one who enters it better and purer for the time. All children and all young persons love her, because she understands and loves them. For she is essentially a mother—that is, a woman who can forget herself, who can give without asking to receive, and who, without losing any of the individualism which belongs to self-respect, can yet live for and in the lives of others, and find her best joy in the well-being of those about her. There is no servility, no exaggerated sacrifice in this; it is simply the fulfilment of woman's highest duty—the expression of that grand maternal instinct which need not necessarily include the fact of personal maternity, but which must find utterance in some line of unselfish action with all women worthy of the name. The ideal woman of middle age understands the young because she has lived with them. If a mother, she has performed her maternal duties with cheerfulness and love. There has been no giving up her nursery to the care of a hired servant who is expected to do for twenty pounds a year what the tremendous instinct of a mother's love could not find strength to do. When she had children, she attended to them in great part herself, and learnt all about their tempers, their maladies, and the best method of management; as they grew up she was still the best friend they had, the Providence of their young lives, who gave them both care and justice, both love and guidance. Such a manner of life has forced her to forget herself. When her child lay ill, perhaps dying, she had no heart and no time to think of her own appearance, and whether this dressing-gown was more becoming than that; and what did the doctor think of her with her hair pushed back from her face; and what a fright she must have looked in the morning light after her sleepless night of watching. The world and all its petty pleasures and paltry pains faded away in the presence of the stern tragedy of the hour; and not the finest ball of the season seemed to be worth a thought compared to the all-absorbing question of whether her child slept after his draught and whether

he ate his food with better appetite. And such a life, in spite of all its cares, has kept her young as well as unselfish; we should rather say, young because unselfish. As she comes into the room with her daughters, her kindly face unpolluted by paint, her dress picturesque or fashionable according to her taste, but decent in form and consistent in tone with her age, it is often remarked that she looks more like their sister than their mother. This is because she is in harmony with her age, and has not therefore put herself in rivalry with them; and harmony is the very keystone of beauty. Her hair may be streaked with white, the girlish firmness and transparency of her skin has gone, the pearly clearness of her eye is clouded, and the slender grace of line is lost, but for all that she is beautiful, and she is intrinsically young. What she has lost in outside material charm—in that mere *beauté du diable* of youth—she has gained in character and expression; and, not attempting to simulate the attractiveness of a girl, she keeps what nature gave her—the attractiveness of middle age. And as every epoch has its own beauty, if women would but learn that truth, she is as beautiful now as a matron of fifty, because in harmony with her years, and because her beauty has been carried on from matter to spirit, as she was when a maiden of sixteen. This is the ideal woman of middle age, met with even yet at times in society—the woman whom all men respect, whom all women envy, and wonder how she does it, and whom all the young adore, and wish they had for an elder sister or an aunt. And the secret of it all lies in truth, in love, in purity, and in unselfishness.

Standing far in front of this sweet and wholesome idealization is *la femme passée* of to-day—the reality as we meet with it at balls and fêtes and afternoon at homes, ever foremost in the mad chase after pleasure, for which alone she seems to think she has been sent into the world. Dressed in the extreme of youthful fashion, her thinning hair dyed and crimped and fired till it is more like red-brown tow than hair, her flaccid cheeks ruddled, her throat whitened, her bust displayed with unflinching generosity, as if beauty was to be measured by cubic inches, her lustreless eyes black-



ened round the lids, to give the semblance of limpidity to the tarnished whites—perhaps the pupil dilated by belladonna, or perhaps a false and fatal brilliancy for the moment given by opium, or by eau de cologne, of which she has a store in her carriage, and drinks as she passes from ball to ball; no kindly drapery of lace or gauze to conceal the breadth of her robust maturity, or to soften the dreadful shadows of her leanness—there she stands, the wretched creature who will not consent to grow old, and who will still affect to be like a fresh coquettish girl when she is nothing but *la femme passée*—*la femme passée et ridicule* into the bargain. There is not a folly for which even the thoughtlessness of youth is but a poor excuse into which she, in all the plenitude of her abundant experience, does not plunge. Wife and mother as she may be, she flirts and makes love as if an honorable issue was as open to her as to her daughter, or as if she did not know to what end flirting and making love lead in all ages. If we watch the career of such a woman, we see how, by slow but very sure degrees, she is obliged to lower the standard of her adorers, and to take up at last with men of inferior social position, who are content to buy her patronage by their devotion. To the best men of her own class she can give nothing that they value; so she barter with snobs, who go into the transaction with their eyes open, and take the whole affair as a matter of exchange, and *quid pro quo* rigidly exacted. Or she does really dazzle some very young and low-born man who is weak as well as ambitious, and who thinks the fugitive regard of a middle-aged woman of high rank something to be proud of and boasted about. That she is as old as his own mother—at this moment selling tapes behind a village counter, or gathering up the eggs in a country farm—tells nothing against the association with him; and the woman who began her career of flirtation with the son of a duke ends it with the son of a shopkeeper, having between these two terms spanned all the several degrees of degradation which lie between giving and buying. She cannot help herself; for it is part of the insignia of her artificial youth to have the reputation of a love

affair, or the pretence of one, if even the reality is a mere delusion. When such a woman as this is one of the matrons, and consequently one of the leaders of society, what can we expect from the girls? What worse example could be given to the young? When we see her with her own daughters we feel instinctively that she is the most disastrous adviser they could have; and when in the company of girls or young married women not belonging to her, we doubt whether we ought not to warn their natural guardians against allowing such association, for all that her standing in society is undeniable, and not a door is shut against her. We may have no absolutely tangible reason to give for our distaste beyond the self-evident facts that she paints her face and dyes her hair, dresses in a very *décolleté* style, and affects a girlish manner that is out of harmony with her age and condition. But though we cannot formularize reasons, we have instincts; and sometimes instinct sees more clearly than reason.

What good in life does this kind of woman do? All her time is taken up, first in trying to make herself look twenty or thirty years younger than she is, and then in trying to make others believe the same; and she has neither thought nor energy to spare from this, to her, far more important work than is feeding the hungry or nursing the sick, rescuing the fallen or soothing the sorrowful. The final cause of her existence seems to be the impetus she has given to a certain branch of trade manufacture—unless we add to this, the corruption of society. For whom, but for her, are the “little secrets” which are continually being advertised as woman’s social salvation—regardless of grammar? The “caux noire, brun, et châtain, which dyes the hair any shade in one minute”; the “kohl for the eyelids”; the “blanc de perle,” and “rouge de Lubin”—which does not wash off; the “bleu pour les veines”; the “rouge of eight shades,” and “the sympathetic blush,” which are cynically offered for the use and adoption of our mothers and daughters, find their chief patroness in the *femme passée* who makes herself up—the middle-aged matron engaged in her frantic struggle against time, and obstinately refusing to grow old in spite of all that nature may

say or do. Bad as the girl of the period often is, this horrible travesty of her vices in the modern matron is even worse. Indeed, were it not for her, the girls would never have gone to such lengths as those to which they have gone; for elderly women have naturally immense influence over younger ones, and if mothers were to set their faces resolutely against the follies of the day, daughters would and must give in. As it is, they go even ahead of the young, and by example on the one hand and rivalry on the other, sow the curse of corruption broadcast where they were meant to have only a pure influence and to set a wise example. Were it not for those who still remain faithful, women who regard themselves as appointed by God the trustees for humanity and virtue, the world would go to ruin forthwith; but so long as the five righteous are left we have hope, and a certain amount of security for the future, when the present disgraceful madness of society shall have subsided.

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Chambers's Journal.

#### DISAPPEARANCES.

THE sudden disappearance of individuals from the midst of society implies in almost every instance mental aberration or crime. Skeletons found in mines, in coal-pits, in disused wells, in quarries, in the walls of ruins, in ploughed fields immediately beneath the surface of the soil, imply so many social mysteries which probably occasioned in their day a wide-spread excitement, or at least agitated profoundly some small circle of relatives and friends. By some law scarcely intelligible to ordinary minds, many persons are urged into the perpetration of acts so little analogous to the general habits of their species, that they are held to proceed from madness; though, if all the circumstances of the case were known, it might be found that they were based on reasonable, or at least on intelligible grounds. Every man may say with the poet: "My mind to me a kingdom is," because within that domain, whether limited or extensive, he bears absolute sway, his subjects being ideas, which he can marshal and compel in this or that direction at pleasure; but, when his ideas rise in rebellion, and refuse to

obey his will, the kingdom is converted into an anarchy, and the man, from being a master, becomes the slave of his own thoughts. In this state there is no knowing what he may or may not do. In nearly all conditions of mind, men derive satisfaction from exciting astonishment or wonder among their neighbors, and causing themselves to be talked of or speculated about, since they thus become more acutely conscious of their own existence, and believe themselves to be of some consequence in the world. No matter to such persons how this is brought about, whether the means be dignified or undignified, wise or foolish; one of our contemporaries, to whom notoriety has been always as the breath of life, finding the public flag in its attention to his doings, forwarded to one of the journals, in a feigned hand, an account of his own death, that he might gratify his vanity by becoming for a few days the subject of general conversation, and reading the eulogiums which he felt certain would be pronounced upon him. The plan succeeded only in part: people certainly did talk a great deal about him, but instead of the unmingled praises on which he had reckoned, he had the mortification to see himself severely censured, and to discover that the general estimate of his abilities was considerably lower than that which he himself made of them.

About two hundred years ago a literary man of some eminence, distinguished as a scholar and admired as a professor, who had visited the most remarkable seats of learning and schools of philosophy then in vogue, gave a shock to public opinion by vanishing, so to speak, in an instant. From his own country, Flanders, then disturbed by civil war, he had passed into France, where as a professor of Greek he enjoyed considerable distinction. Walking out one day while the streets of the town in which he lived were full of people, a gentleman standing at a door on the opposite side of the road beckoned to him, and in the sight of many to whom he was known he crossed and entered the house. From that moment he was never again seen: his friends, his auditors, the magistrates, and other public authorities of the place, made search

and instituted all possible inquiries to no purpose:

Moons rolled on moons away;  
But Conrad comes not—came not since that day.

Whether the worthy professor was murdered in that house, or sported, *à la* Speke, with public curiosity, or had committed some crime which rendered it advisable for him to disappear, or met his death by accident, or changed his name and went into a monastery, or ran away with some neighbor's wife—or in whatever other way we may account for it, such was the apparent end of Everhard Feith, whose name, however, will be long remembered by all lovers of Greek literature, by his learned and interesting *Antiquitatis Homerica*.

There is a tradition—it may be nothing more—which attributes the mysterious disappearance of another learned man to a very different cause. It was not final like that of Feith, but it seems to have been sudden, and for a length of time complete. A young Oxford student, looking forward, it seems, to eminence in the Church, and distinction as a theologian, vanished suddenly from amongst his friends, and the course he had taken defied at once all search and conjecture. Almost simultaneously with the departure of the Oxford scholar was the advent of a daring corsair on the Mediterranean, who swept the waves like a falcon, plundered ships of all nations, and piled up immense wealth in a small barren island, which he made his nest. Here he associated more or less freely with his followers, leaving them occasionally for the company of a lady whom he had made the partner of his wild life. When he had fulfilled the object for which he became a sea-rover, the lady having died, the rock was left untenanted, the pirates dispersed. Not long after, the student reappeared at his university, applied himself as before to study, and entering the Church, gradually rose to its highest honors, and died Archbishop of York.

About the year 1812, an officer of the Preventive Service living with his wife and family at Margate, and known more or less familiarly to the whole town, went forth as his duty required to walk along the cliffs, and watch whatever appearances might present

themselves on the sea. The month was November; the time of day about four in the afternoon; the weather wild and blustering; he was in the heyday of life—his frame powerful, his health perfect, his condition of mind analogous to that of his body. With double-breasted coat buttoned up to the chin, and tightly-fitting cap—with spy-glass in hand, a pair of pistols in his pocket, and a heavy cutlass by his side—he moved westward along the downs, meeting and conversing with several persons as he sauntered along. Presently the night set in darksome and drizzly, with heavy gusts from the south, which, rolling in the big waves before them, dashed them in thunder against the cliffs. Out of the darkness of that terrible night the officer never emerged: all possible search was made for him or his body, but without effect; it was suspected, and the suspicion seemed reasonable, that he had fallen over the cliffs, and been washed out to sea; his wife and children lamented him; another officer was put into his place, and by degrees his disappearance ceased to be spoken of. Thirty years later—that is, in the summer of 1842—walking with one of my children along the downs, I saw a farmer ploughing at a short distance beyond the flag-staff, and stopped to talk with him on the subject of seaweed manure. While we were conversing, the man observed something glitter in the furrow he had just made—it was the button of a naval officer; this led to further examination—the earth was removed, and little more than a foot beneath the surface, the skeleton of a man, with several fragments of his dress, was discovered. It was ascertained that the uniform he had worn was that of the Preventive officers; and it seemed probable, from various circumstances, we had discovered the skeleton of the man who had disappeared in 1812.

Sometimes, in moving about the world, you come in contact with one end, so to speak, of a disappearance, while you occasionally witness the phenomena which accompany the other end. While in quarantine at Malta, the plague broke out in the lazaretto three doors from my apartments, and one man, a traveller from the East, died. Scarcely was the breath out of his body ere preparations

were made for his funeral: a coffin was improvised, placed on a small bier, and four *guardiani*, dressed in black and muffled, bore him hurriedly along the esplanade under my window to his long home. I took some pains to ascertain who he was, but without success; he had given no information to any one during his terrible illness, and his luggage contained no papers which could throw any light on his name, his circumstances, or his country. All, therefore, that could be said was, that a man had disappeared from the earth, though he had doubtless friends somewhere who mourned his loss, which to them must always have remained a mystery.

Another instance, in some respects similar, I witnessed on the banks of the Nile. While moving southward along the river, I saw on the sand close to the water the corpse of a man which had apparently just been washed ashore. That he had been murdered there could be no doubt, from the deep gash in the back of his head, where the skull had been broken in as if with an iron bar. He had been a man above the ordinary height, broad-chested, with large limbs, and athletic figure, probably about forty years of age. Two Arabs were engaged close at hand in digging a grave; for to them, as to the ancient Greeks, it is an act of piety to bury the chance dead whom they may find in their way. They judged as we did from appearances, that the body might have been eight or ten days in the water, floating downward with the current, so that he was probably murdered high up in Middle Egypt. Wherever his home may have been it was now desolate, and all those who had been his friends were lost in speculation respecting his destiny; all they knew was, that he had left his home on a certain day for business or pleasure, to take a walk or visit a relative; a curtain then fell on his doings and whereabouts never to be withdrawn.

Here in London, almost every day presents us with social phenomena quite as startling, though somewhat different in character. Men leave their homes to make a call upon a friend, and their absence proves eternal; young ladies run away from their families, sometimes with Frenchmen, who may be known

by the trick of biting their nails; sometimes with Germans, no less remarkable for their fondness for beer; sometimes with our own gay countrymen, who often, however, desert their victims in the course of a few weeks, so that, if they think proper, they may return to their friends. In general, however, no such thought comes to them, so that an act begun perhaps in thoughtless passion, terminates in a life of shame, or in suicide. Many years ago, there happened in a family with which I am acquainted, an incident belonging to the class of facts above described. A young lady about two or three and twenty, through no motive that could be divined, except that of amatory caprice, left her father's house so suddenly and secretly, that no trace of her movements could be discovered. It was not even known whether she went away alone or in the company of a lover. Advertisements, placards, offering a large reward, were had recourse to. The father, widely known, and as widely respected, interested all his friends in prosecuting inquiries respecting the lost one, without avail. Year after year passed, and at length the truant might be almost said to be forgotten. More than forty years afterward, a brother of the lady, though not born when she disappeared, emigrated to Australia, and, on arriving at Sydney, had his name inserted in the journals, in the list of passengers. One morning, while sitting in his hotel at breakfast, he was informed that a lady below desired to speak with him. "Show her up," said John Bull, rather perplexed to conjecture who could wish to see him in that new world. When his visitor entered, he saw that she was old, though still in robust health. Instead of explaining her business, she abruptly inquired whether or not he was the son of a gentleman whom she named, together with a locality in which he had resided in England. Upon being answered in the affirmative, she said: "Then I am your sister;" and forthwith entered into a full account of her mysterious disappearance. She had not left her home alone, but with a lover inferior to her in rank, who had taken her to Australia, where he had set up a hotel, and realized a fortune. It was



the affair of the hotel, however, that had withheld her from communicating with her family, who might have regarded it as a degradation to live by industry. Her husband, however, was now dead, yet the hotel still sustained its celebrity under the management of the lady, who, when she fled from her home, had not at all events fled to poverty.

A more striking example of these social phenomena is that of Agnes, daughter of James Ferguson the mechanist. While walking down the Strand with her father, she slipped her arm out of his while he was lost in thought, and he never saw her more, nor was anything known of her fate till many years after Ferguson's death. From the short hints which have been left us on the subject, it appears that a nobleman to whom she had become known at her father's lectures took her, in the first instance, to Italy, and then—but whether there or after their return to England, is not stated—deserted her, in conformity with the general rule. She then applied to Garrick, who gave her a trial on the boards, but the attempt proved a failure. Agnes next tried authorship, with no better success; after which, in despair, she threw herself upon the streets, and died miserably in Round Court, off the Strand; and it was upon her deathbed that she disclosed to the surgeon who attended her the melancholy story of her career. From the localities in which she habitually moved, she must frequently have passed her relatives in the streets, though withheld by shame from making herself known, while they imagined her to be in some distant country, or in the grave.

At Llanelly, in South Wales, a man of property and respectable position, though not a gentleman, who had married and become the father of two children, left his home suddenly without being observed by any of his neighbors, and all the inquiries made by his wife and his relatives proved unavailing. The Welsh are an affectionate and, upon the whole, a romantic people; but the deserted wife was not romantic, so, after waiting a certain number of years, in expectation of her husband's return, she listened to the wooing of another

man, and married again. There was no poetry in her composition, neither was she, like Tennyson's Mrs. Arden, driven to take this step by the fear of poverty for herself or her children. The truth was, the buxom Welshwoman wanted a husband, and took one, having waited long enough, as she thought, for her first lord and master to come back, if he meant to come back at all. But though the wife thus gave proof of her want of faith in the husband of her youth, or else really believed him to be dead, the lost man had a sister much younger than himself, who instead of sharing the wife's despair, regarded her second marriage as an act of vice, and always looked forward confidently to her brother's return. When he had been absent about eight years, however, a circumstance occurred which staggered even her confidence. A man in sailor's garb called upon her, and related that he had brought a message from her dead brother—for that he was dead he made no doubt at all. The ship in which they had been together in the Pacific went to pieces on a coral-reef, and all hands, he said, perished except himself. His life was saved by the accidental passage of a whaler, the crew of which, discerning a man upon the reef, lowered a boat and took him on board. During the five years which had elapsed since that event, he had been a wanderer in America and elsewhere; and in obedience to the locomotive instinct, he soon resumed the habits of his former life, and disappeared from Llanelly. This story soothed the wife's conscience, and somewhat softened the asperity with which the female critics of the town spoke of her second nuptials.

Years again rolled on, and the missing John Williams was not only given up as a lost man, but almost forgotten. All who are familiar with the habits of the Welsh people know that in small towns and country villages they are in the habit, when they go out, of leaving their doors on the latch, locks and keys being thought almost superfluous. One fine day, toward the close of summer, when Mrs. Williams, now Mrs. Williams no longer, had gone forth with her husband and the two children (she had none by her second marriage) to enjoy a walk in the neighboring fields, John suddenly

made his *avatar* at Llanelly, and, going straight, to his own house, lifted the latch, hung his hat on a peg in the passage, and then, finding no one at home, went and sat on a window-seat, whence he could command a view down the street, to watch for his wife. After a short time, he saw her and his two children coming toward the house in familiar conversation with a man, whom, however, he had known from a boy. He sprang from his seat, and ran to the door to meet them. A romance-writer might make something of the situation, and I leave it to the romance-writer. When Mrs. Williams saw her first husband emerging from the door, she forgot her second, and, bounding forward, threw herself, with a burst of tears, into his arms, while honest Griffiths looked on in astonishment and wonder. The circumstances of their position were soon explained, and the question now was, who should have the wife? The matter was settled in this way: the men stood on either side of the woman, and it was agreed that to whomsoever she should turn and give her hand, he should remain master of the situation. She decided in favor of Williams—the old love, though eclipsed for awhile, remaining still the stronger in her heart. This appears to be the story upon which Mr. Tennyson has based his poetical legend of *Enoch Arden*.

An anecdote related not long ago in the *Times* may be cited to prove, if any proof were needed, that women do not always show themselves unworthy of a man's faithful love. In a village in Somersetshire, two lovers, possessing no means on which to live, agreed to separate; the man asking the woman to wait for him a certain number of years, after which she would be free, if she thought proper, to marry another man. She affirmed, however, that she would wait for him till death; and he went abroad. Several years later a gentleman returning by train from London to Taunton had a companion in the carriage whose complexion and manner excited his curiosity. He was swarthy and sunburned, in the full vigor of manhood and strength, but excited and uneasy, with a wandering eye and twitching features, especially when they entered Somersetshire. At length he

found it impossible to preserve silence, and asked the gentleman if he knew a certain village near Taunton.

"I live there," was the reply, "and am just returning to it from town."

"Then," said the young man, with difficulty restraining his emotion, "do you know such a one?"—mentioning a young woman's name.

"Yes—perfectly well."

"Is she?"—And he could get no further.

"Married, you would ask," said the gentleman. "No; she is waiting for her lover, who is gone abroad."

"That's me!" exclaimed the man with enthusiasm. "Thank God she has waited, for I am come back to marry her."

The sequel may be left to conjecture.

A friend of mine living with his wife at a seaport town, had made the acquaintance of a gentleman in the neighborhood about his own age, and so like him in feature and figure that one might at any time be mistaken for the other. The resemblance was in fact so complete, that when the men stood side by side, it was difficult to determine in what point the likeness failed. Of this curious circumstance the country gentleman took advantage after the following manner. Calling upon my friend one Friday evening, he said he wished him, in the course of the following day, to take a passport for himself from the French consul, and then hand it over to him. "I want to astonish the folks here," he said, "but could not do so if I took the passport myself and in my own name." Suspecting nothing wrong, my friend did as he was requested; the fabricator of astonishment on that same evening passed over into France, and in the course of a few days his reasons for disappearing came to light—he had committed forgery to an immense amount, and his disappearance from England was final. After crossing the Channel, no one knew in what direction he travelled, what name he assumed, to what country or manner of life he betook himself. He had friends, many friends who loved him dearly in spite of his transgressions; but they went on, living from youth to age, without obtaining the slightest hint of what had befallen their relative, who may still be

doing penance on the banks of the Ohio or the Susquehanna for the wrong he perpetrated in youth.

It is well known that in France, before the Revolution, the vanishing of men almost before the eyes of their friends was so common that it scarcely excited any surprise at all. The only inquiry was, had he a beautiful wife or daughter, for in that case the explanation was easy; some one who had influence with the government had designs upon the lady, and made interest to have her natural guardian put out of the way while those designs were being fulfilled. A *lettre de cachet* effected the purpose in view for any number of months or years, or, if necessary, for life; and the individual thus spirited away, should his concealment be transient, was generally careful to treat the affair as a jest, lest his fate should be made to resemble that of the great state-prisoner, a part of whose adventures are well known, though his identity has never been ascertained, for the conjectures of Lord Dover and others carry with them their own refutation.

Russia is still what France, and still more Italy, were formerly, the land of mystery; that is, for the words are generally synonymous—of crime.

Colburn's Monthly.

#### A LONE MAN.—A TALE OF THE FIRST "STRIKE."

BY ALEXANDER ANDREWS.

OUR acquaintance was not one of many years. I forgot *when* he first came among us, but then he could not have been more than forty—he was under fifty when he died—yet his cheeks were ploughed with furrows, his hair was white, which was the white of sorrow, not of age, his back was bent with a weight of grief, his footfall was heavy under the secret burden he was bearing. He was reserved, lost in thought, with his eyes fixed vacantly on the distant horizon when he spoke, which was seldom. What dreadful grief or trouble was grinding him into dust? It was not poverty, for he had property, as he unostentatiously divulged to us; it could not be conscience, for he was of a pious and devotional spirit, and good, charitable, feeling heart. What could it be? We never knew till he was gone

from us, and we found among his papers the following terrible history. It was by this light that we read those significant bequests of his will: "To the Society for the Protection of Life from Fire, the interest of five thousand pounds for ever; and a like sum to the Royal Humane Society."

Men are beginning to forget the riots of the war-time, when scarcity of provisions drove the people mad, and made savages of quiet, long-suffering Englishmen; when machinery—such as it was at that time—aroused their jealousies; when demagogues went about riding upon the popular ignorance, proclaiming equality and division of property among those who would help to burn and slay. A generation has sprung up who cannot believe in such things as having occurred in peaceful England—a generation, let us hope, has sprung up who could not do or threaten such things. The memory of them is fading from those who were in their midst, and they are beginning to fancy it was not so alarming a state after all, because by a hair's-breath it fell short of revolution.

But I have reason to remember them in all their horror. At that time I was a young man in business in the midland counties—a manufacturer. I had married, some years before, one of the most tender, loving, faithful creatures that ever made sweet to man's ear the name of woman. Outside the town we had a pleasant little cottage, fitted with all the comforts and some of the luxuries of existence, and God had blessed us with three darling children—all girls—in whom and in our happy home and smiling garden all our affections were bound up. Business was prosperous, and I had entered into the system, since so largely developed, of applying machinery to enable me to keep pace with its progress. Although those mill-owners around me who had adopted the new inventions of the time for economizing labor and increasing production had been subjected to outrage and even personal violence, I for some time escaped; for I may say that I, and, perhaps, still more my dear, kind, charitable little wife were favorites in the neighborhood, and, up till a certain time, my property was respected, and I had even been in-

strumental in averting the attacks of the mob from the premises of some of my less popular brethren. But desperation at last drove the angry multitudes to my direction—desperation and impunity, for we had applied to the Government for the protection of the military, but our town had at the last election returned two opposition members, and was in no favor with the powers at the Home Office, so the authorities were in our case wonderfully tender of the liberty of the subject, and sent us back word that the civil power must be sufficient for the preservation of order. The civil power having entirely failed in arresting the progress of outrage, the mob had gained confidence, and when it had broken the windows and destroyed the machinery of all the other mills, it bent its steps to mine, and left the place—a wreck.

I had refused to arm my own "hands" against the deluded people; but when there went forth a report that the private residences of the mill-owners were to be visited at night and given up to sack and pillage, I felt justified in protecting my own home and wife and children at the cost of blood and even life.

Dear Agnes! for three whole nights we sat and watched together for the sound of those who threatened our precious charge. But, although the work of spoliation, accompanied by brutality to women and children, had been carried to other houses, the rioters had as yet forborne to visit ours. On the fourth night I persuaded my wife reluctantly to take some rest whilst I remained on guard below.

Our cottage had a pretty terrace and verandah opening out from the front, and beneath this was our snug little breakfast-room and playroom for the children. The disorderly mob had as yet, by a strange—perhaps in all the wildness of their violence a good—impulse, abstained from attacking houses wherein the inmates appeared to have retired to rest, as if even they scorned to take a treacherous advantage of those whom they madly regarded as their enemies and the causers of their privations and sufferings; so it had become a habit to conceal all lights or signs of life about the house, lest they might appear to challenge them to the attack. Our little

breakfast-room seemed the best position from whence to hear the first alarms of a hostile approach, and also the least obnoxious to observation from without; and in this room we accordingly held our nightly watch and ward.

It was, as I have said, the fourth night of our apprehensions: the fury of the malcontents seemed to have expended itself, and the turbulence to be dying away. But for this I should never have succeeded in persuading my poor little delicate wife to leave me, or to take that rest of which she now stood so much in need.

And so I sat in my lower chamber through the long hours of the night, watching—watching—watching. With a pistol on the table, and a darkened lantern, so that the rioters might not see a glimmer through the cracks of the shutters, I sat listening for the sound of the threatened attack. Twelve—one—two o'clock. Yet all was still. I thanked God that my dear ones had got so much peaceful rest at last. Once or twice I stole stealthily and on tip-toe up to the apartments where they were calmly sleeping, to assure myself that they were yet safe. Yes, there lay my golden-haired Fanny, the eldest born; my bonny Clara, the romp, worn out, and lying with her elbow under her head; and baby Esther, with a smile upon her plump little face; and, with her arms around and over them, guarding them in their sleep, my beautiful Agnes, that gentle, doting mother, surprised into a troubled slumber by fatigue and constant vigilance. I crept down-stairs again, comforted and reassured—down to my basement hiding-place, to watch and listen, listen and watch. The night crept on, and I fancy I must have slept, when—crack! crack!—I sprang to my feet!

*The enemy was in the house!*

Ay! the enemy was in, and was between me and those I loved so dearly, fierce, pitiless, and remorseless, every minute growing in strength and fury—an enemy between me and them too strong for me to encounter single-handed or beat back, crashing up the stairs to surprise them in their sleep! Perhaps already he had destroyed those precious innocents and their loving mother. Madened by the thought, I rushed out; the enemy was in possession of all the house above me, and had sufficiently



prevented my escape from below. FIRE! The staircase was in flames, roaring, tearing, licking the walls; the centre of the house was already a seething furnace, and my wife and children were above it!

I heard one shriek. What was life to me *now*? I plunged, fought, stumbled, fell, and fought again through the flames, spurning the stairs in burning logs under my feet, till I burst into the bedroom where they lay. I could see nothing; the room was a cloud of dense stifling smoke. Twice I fell in groping for the bed; then I clutched the curtains, and, raising myself on my knees and spreading out my hands, I felt a child. I dragged it to me; it was Clara, my second little pet, and somehow I found myself by the window, which I smashed outward.

There was a crowd below; they were the rioters, truly enough—but they were also men.

"Throw the child out and we'll catch her!"

I obeyed instinctively.

"Jump out yourself!"

"Not yet."

But, as I turned, I found that the flames had been drawn through the room by the draft from the window, and the bed was a mass of fire! Just then a portion of the floor gave way, and the bedstead, with all its precious burden, fell through into the hissing hell below!

A firm grasp seized me from the open window; I was dragged through, and had just consciousness enough to find that I was in the arms of a strong man on a ladder, when in my struggles to disengage himself, and return to the room, he, I suppose, lost his balance, and we went falling over and over to the ground.

That was all I knew for three months. At the end of that time I awoke up in a strange place, with many beds and kind, quiet nurses, and at last learned that one child was saved, my darling Clara. She and I were all who survived that hideous night.

Burnt, scarred, crippled for life, I yet had one staff to support my maimed existence. I thanked God, even in my agony of ruin, that he had spared her to me, and for her should my remaining years be dedicated. Oh, how often it

came back to me, the sound of that dear wife's voice in the time of her illness, "If I should be taken, you will take care of our poor little Clara, won't you? She is so delicate, you know!"

It was long before I was suffered to discover that *I* had been the cause of all these horrors! In the apprehension of flight, a great quantity of linen and clothing had been prepared at the foot of the stairs for hasty packing, and, as I came down from taking my, alas! last view of those dear ones, a spark must have fallen from my candle among them. How some sparks will die and go out almost on gunpowder, and others ignite the least inflammable materials, is one of those problems that defy the calculations of the most experienced. Draughts from cracks or beneath doors will fan a spark into a flame in a few seconds—and thus it must have occurred.

The loss of my mill and of my property did not ruin me. I had ample private resources left to maintain me and my little daughter. I had no heart left in me for business, so I never attempted to restore the works which the rioters had demolished. Others did; and my old factory, I am told, is now a palace of industry of wonderful dimensions, and full of the latest inventions of science; and my dear little happy home is enlarged and amplified into a mansion. Ah, me! grand as it may be, it would never be so handsome in my eyes as the little rose-covered cottage, with its pretty garden, where I once was wont to see my dear wife with her three little golden-headed children, tying up her pinks and piccotees, or training her honeysuckle over the porch! They tell me it is all changed—all so fine now; but I have never been to see it.

For I turned my back upon the busy town as soon after my dreadful trouble as I could. My little girl was delicate and fragile; the smoke of towns was not an atmosphere for *her*—the scene of my past lost happiness was not a place for *me*. So we went to the Southern coast and passed a winter.

My anxiety about the child was always filling my thoughts. Oh! the sleepless nights I have passed if she but coughed; for did I not fancy I already saw the pink spot upon her cheeks,

which is the herald of our country's insidious enemy, consumption? The tearful, pitiful prayers I have sent up to Heaven to preserve her to me, and me to her!

And then, Fire! The nights and nights I have sat up, because I fancied there was a smell of burning in the house! My brain was always on the rack for her. Clogs to keep her feet dry—woollen jackets to keep her warm—hare-skins for her chest—comforters for her throat! Perhaps I only made her more delicate—the doctor intimated that I did. But what was I to do in my alarm and terror of the thought of losing her? She was my all now—my only hope—my only support—my only bond on earth; the dear legacy of my poor, loved, BURNED wife!

Whether the doctors were right or not—whether I was wrong or not—it was a fact too plain for me to ignore that little Clara was growing more and more delicate every week. At length, as summer came on, I was advised to remove her to the more bracing air of the eastern counties—to put her out to be nursed at some farm-house in Essex or Norfolk, where she would have the benefit ("the *chance*," they said) of pure air and pure diet.

"Put her out," indeed! She should go—but I would be with her.

In former times I had known a worthy farmer and his wife in the eastern counties. I had been a wayward youth, and my father, the only parent left to me in my recollection, had—God forgive him!—been but an indifferent one to me, and had put me away to live with this kind but childless couple. I had never forgotten their goodness to me—their care of me—their patience with me—their screening of my youthful faults—their fond pride of me when they had won me round to gentleness, and tamed me by their constant love. To them, in my trouble, my heart yearned—they would take care of my child. I was not mistaken; I wrote to them in my affliction, and by next post they entreated me to come and bring my little Clara, to stay as long as I liked. Oh, how she prattled to me over again the stories I had told her of the great farm-house with its gabled roof—of the famous cedar-tree that, in the course of generations, had

grown to out-top the house itself, and covered a part of it with one of its fantastic planes, each of which might have been a century in growing—of the nice snug styies wherein the pigs lived—of the house "on the top of a stick," with holes in it for its inmates, the pigeons, to go in and out—of Diamond, and Punch, and Boxer, and Pilot, the old farm horses, and of Polly, and Blackey, and Strawberry, and Miss Nancy, and the rest of the cows—of old Billy, the goat (old even in my time)—of Tray, the watch-dog, and Trim, the fat spaniel on the hearth-rug (ghosts every one of them, long since)—of the "dutt," as the dear little creature called them, in the pond, and the geese, and the sheep, and the lambs—and the great swinging gates and the blackberry hedges. Bless her! she had never lived at a farm, and all these things were so many exciting novelties to her imagination. How her blue eyes sparkled, and her cheeks burned (still that pink spot, alas!), as she talked of them all the way we travelled into Essex.

And, arrived at last, what too good for my little Clara! Eggs, cream, toast. The poor child must be hungry and in want of her tea after that long journey, so all was ready an hour or two before we could by any possibility have arrived.

"But wait a bit. A chicken—the wing—a piece of the breast—it can't hurt her. Dear child! what sweet eyes—what lovely features—what golden hair—what a pretty little tongue—what sturdy limbs! Oh, you needn't fret; *she'll* be strong enough soon. There's no consumption in *her*!" said my host and hostess in a breath. "You'll soon be well, won't you, darling?"

"Yes, please," from a little hanging head, with a shy glance out of the corner of the eye, changed to "Yes, thank you," still more shyly when she heard them laugh at her reply.

But next morning the shyness was all gone. The dear old couple could not exist without doing good, and had long since adopted the child of a poorer brother, now a fine girl just bouncing into womanhood. Children have steady instincts, and, from the first moment of their meeting, my Clara had recognized

her as a friend. To her she had attached herself, with her she elected to sleep; it was Hetty who dressed her, Hetty who curled her hair, Hetty who took her to see the young pigs, Hetty who picked fruit for her in the garden, Hetty who called her to see the young "chick-chicks" have their breakfast, Hetty who first introduced her to the ducks, and held her tightly by the hand whilst she threw crumbs of bread to them in the pond. She was full of "Hetty," and Hetty would go nowhere without "Pet," as she named her.

And when her fourth birthday came, and the good-natured girl rummaged up from among the wrecks of her own childhood a set of little tea-things, my little Clara gave a party to Hetty, and entertained Hetty with the plum-cake which the admiring old lady of the house had made for her, and poured out the tea "all by herself," and went off to bed tired enough, poor little dear, and kissing a doll on her pillow, which Hetty had bought and dressed for her.

Six months passed away, and the old people's prediction was realized. Consumption, if it had ever existed beyond my alarmed suspicions, had resigned its prey, and the roses had returned to my little darling's cheeks.

So far I had fulfilled my pledge to my lost Agnes!

But the winter was coming on, and I dreaded the mists which arise in autumn even in the higher parts of Essex, and feared the cold wind that would gather round that hill-seated house. Above all, as the evenings grew long and chilly, and great fires began to be lighted at sunset—and candles were carried about from room to room—and men were cutting chaff in hay-stored lofts after the horses came home at night—and tramps sought shelter in stables and under ricks (and tramps who can procure neither food, nor clothes, nor lodging seem to always have money to buy tobacco and matches)—and the stackyard was full of hay, and corn, and bean-ricks—and the outbuildings were for the most part roofed with thatch—and the yard was thickly littered with straw—and the old-fashioned chimneys were twisted, and probably seldom or never swept—and incendiaries might be about—and country parish engines are always out of

repair—and it was so far to send for assistance—and I don't know, indeed, how many more misgivings came into my head as the nights drew in; but my thoughts were always running upon Fire!—FIRE IN THE NIGHT!

So I at last resolved to carry my precious treasure into the greater security of a town for the winter.

The day for our departure came. I felt much distressed at removing my child from the house where she had been so happy and so kindly cared for. But the thought of fire ever haunted me. And, to my comfort, I perceived that the idea of parting seemed to trouble her less than I had feared. Change, novelty, the excitement of a new home, new scenes, and new people, are compensating influences in a child's mind for all she is leaving behind her. Her business on the morning of our journey was to take leave of all her pets and playmates—to pat poor Tray—to kiss fat Trim—to see the chickens have the last breakfast—to say a kind word even to the pigs. She was all over the farm before breakfast with Hetty. Then, as it wanted a full hour to the time when the coach would pass along the road, two fields off, she had to go round and take another look at them all, while I went up-stairs to pack my trunk.

I heard Hetty calling "Clara! Clara! the coach is coming! Clara! don't you hear the horn! Where are you, darling?" And, when I came down, Hetty was still running about the yard, calling "Clara! Clara!" She had left her for a few minutes to put up some more little playthings, and, when she returned, Clara had rambled off again.

"Where can she be?" they all asked. "The coach is at the gate!"

The coach waited a few minutes, and then went on without us. We could find Clara nowhere. Presently the ducks came waddling up the field.

"Oh," said Hetty, "I dare say she has been down to wish them good-bye. Let us go and see."

We went down to the pond; but no Clara was to be found.

No!—only a little crape hat floating on the surface of the water.

Then I felt that I was indeed alone!

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## Popular Science Review.

## THE GREAT ECLIPSE OF AUGUST 17, 1868.

As there intervene rather more than five and a half months between successive eclipse-months, it follows that there may be three, and must be two, eclipse-months in the course of a year. If there are three, one may be of class 1, the other of class 2, in which case there are seven eclipses—the greatest number which can possibly take place within the course of a single year. If there are only two eclipse-months, these may be of any of the above classes, but not both of class 1. If both are of class 3, there are only two eclipses, and both are solar and either total or annular.

Thus we see the reason of the statement commonly made without assigned cause in popular works on astronomy, that there are never less than two or more than seven eclipses, and that if there are only two, both are solar. To this we may add the rules that, if there are seven, four are solar; and that, if there are two, the moon is obscured four times in the terrestrial penumbra.

It is also evident, that the most important eclipses are likely to take place when there is a single solar eclipse during the passage of the critical period. This happens twice in the year 1868. One of these eclipses took place on February 23. It was annular, and visible so near to us as the northern parts of France. The other will take place on August 17, and will be a very remarkable eclipse.

We have seen why a single solar eclipse (during the eclipse-month) is likely to be a noteworthy phenomenon. Let us next consider what other circumstances affect the magnitude of an eclipse.

The earth moves around the sun in an elliptic orbit, her greatest and least distances from the sun being respectively as 31 to 30. The moon, also, moves round the earth in an elliptic orbit, her greatest and least distances being as 10 to 9. Thus the apparent diameters both of the sun and moon are variable; the diameter of the sun varying between the values  $32'36''\cdot4$  and  $31'31''\cdot8$ , that of the moon between the values of  $33'31''\cdot1$  and  $29'21''\cdot9$ . Thus at the epoch of central eclipse the sun may be wholly obliterated or a ring of

light may be left unhidden. The extreme cases are—(1) when the sun's diameter has its greatest value and the moon's its least, in which case there will remain a ring of light  $1'37''\cdot2$  wide; and (2) when the sun's diameter has its least and the moon's its greatest value, in which case the moon's disk overlaps the sun's by  $59''\cdot6$  all round, and the sun continues, therefore, for several minutes wholly obliterated.

But it is clear that an eclipse of this extent cannot happen once in many thousands of years, nor can one happen often which approaches even pretty closely to the conditions here required.

It is obvious that if the moon is removed by any considerable arc from her perigee, or the sun from his apogee, there will be a much smaller umbra. In point of fact, most of the noted total eclipses have fallen far away from the equator, and thus have been less considerable than those which can take place in equatorial or sub-tropical regions.

But in the great eclipse of the present year, nearly all the conditions which tend to increase the moon's shadow are pretty closely fulfilled.

First, as respects the sun's apparent diameter, which should be as small as possible. We have seen that the least value this element can have is  $31'31''\cdot8$ , the greatest  $32'36''\cdot4$ . On August 17, the sun's diameter will be  $31'41''\cdot0$ , or  $9''\cdot2$  greater than the least and  $55''\cdot4$  less than the greatest value. Of this element then we can merely say that it is favorable. But the apparent magnitude of the moon is a more important element. It should, of course, be as large as possible. We have seen that it varies between the values  $29'21''\cdot9$  and  $33'31''\cdot1$ . On August 17, it will be no less than  $33'28''\cdot6$ ; only  $2''\cdot5$  less than the greatest value this element can have.

Then, as respects the latitude of the regions traversed by the eclipse. This should be such that the sun should rise nearly to the zenith of the place at which the eclipse is central at noon. In the present instance the sun is only  $2\frac{1}{2}^\circ$  from the zenith to the spot where this happens (longitude east from Greenwich  $102^\circ 50' \cdot 6$ , north longitude  $11^\circ$



35'·7). In this region the total eclipse lasts 6m. 50s.

Now, there are three motions to be considered. First the earth, as seen from the sun, is moving bodily from right to left at the rate of upward of 65,000 miles per hour. Then the earth is rotating upon her axis in such a manner that regions visible on the disk appear to be moving from left to right. Lastly, the moon apparently traverses the earth's disk from left to right, or in the same direction as that of the former motion—but at a greater rate. In fact, the apparent motion of the moon (as supposed to be seen from the sun) during the eclipse of August 17, is about twice as great as that of the equatorial parts of the earth.

If the earth were not rotating, the moon's apparent path would be approximately straight during the transit; in fact, referred to the earth's disk, it is so. But the region actually traversed by the moon does not appear with straight edges. This is due to the earth's rotation, which brings regions within the path of the shadow, which would not otherwise be eclipsed.

We see also that the length of the region actually traversed by the black shadow, which would be a semi-circumference of the earth (in the case of an eclipse so nearly central) if there were no rotation, is diminished considerably through the effects of the earth's axial rotation.

There is an oval in each figure, and each oval is divided by a curved line into two halves. The oval contains all those regions over which the sun is eclipsed totally or partially at rising. We see that the line of country extending from the Black Sea across Africa which has just reached the visible, that is, the illuminated half of the earth's disk is in shadow; in other words the sun is partially eclipsed at rising. The upper and lower intersections of the shadow's outline with the circular boundary of the disk, mark two points at which the eclipse ends at the moment of sunrise, and these two points lie on the left-hand curve of the divided oval. This half of the oval's boundary contains all such points. The other half contains all points at which the eclipse begins at sunrise. The dividing line contains all points at which the middle of the eclipse occurs at sunrise.

The oval contains all those regions over which the sun is eclipsed wholly or partially at sunset. The right-hand half contains all points at which the eclipse begins at sunset, the other contains all points at which the eclipse ends at sunset; and the dividing line contains all points at which the middle of the eclipse occurs at sunset. In this case as in the former, one figure illustrates the other; we see, for instance, that a part of the region within the oval is on the edge of the disk and within the shadow is partially eclipsed at sunset. The points of intersection of the shadow's outline with the edge of the disc indicate, of course, points at which the eclipse begins at sunset.

The region traversed by the eclipse could hardly have been better suited than it actually is, for the purposes of observation. Had it occupied any other part of the tropics, as the Pacific Ocean, the South American Continent, or Africa, it would not have been easy to supply skilled European observers in sufficient number, nor instruments of adequate power. If it had fallen much further north or south, again (still lying within the tropics), the difficulties of observation would have been largely increased.

As it is, there are many points along the line of central eclipse which are conveniently accessible. It passes close to Aden, and nearly coincides with the track followed by our steamers between Aden and Bombay. By a singular coincidence two mail-steamers, one from Aden for Bombay, and the other from Bombay for Aden, will pass through the black shadow. A third steamer from Bombay on August 18 will be starting nearly at the time of total eclipse. But the most important part of the shadow's path is that which traverses the Indian peninsula. I shall follow Major Tennant's account of this portion of the line of central eclipse. He has "computed for the whole breadth of the Indian peninsula the central line and the limits of totality." He writes: "The central line enters on the west coast of India, in latitude 16° 35', passing near Muktul and Guntoor, and a little north of Masulipatam. The shadow is about 143 miles broad. The northern limit passes close to the town of Sholapoor (which is accessible by rail from Bombay), about

twelve miles north of the large city of Hyderabad in the Dukhun, and eighteen miles north of Rajamundri, at the head of the delta of the Godaveri. The southern limit lies eight miles north of Goa, or twenty miles south of the station of Belgaum, twenty miles south of Bellary, twenty-four south of Kurnoul, and seventeen south of Ongole. It includes thus the stations of Kolapoor, Belgaum, Kurnoul, Sikunderabad, Ongole, Guntoor, Masulipatam, and Rajahmundri, besides some smaller ones; the whole course of the Kistna, its delta, and that of the Godaveri, and parts of the valleys of the Bhema and Toongabudra lie within these limits. Leaving India proper, the shadow crosses the Bay of Bengal, includes the north Andaman Island, and then passes through the Mergui Archipelago and the province of Tenasserim, across the Malay peninsula to the island of Borneo (including on its way part of the promontory S.W. from Saigon), which it reaches between our colony of Labuan and the Sarawak country, and eventually through Torres Straits. Of this course," adds Major Tennant, "the west coast of India will be experiencing the south-west monsoon. The same state of things exists at the Andaman Islands, and on the British side of the Malay peninsula. The other side is not easily attainable, and I am not aware that there would be any inducement to go to Borneo. The eastern part of the track through India affords, I believe, every chance of fine weather, and I think observers would do well to select that part."

The duration of totality at points along the line of central eclipse across the Indian peninsula will be from 5m. on the western coast, to 5m. 50s. on the eastern coast. In the eclipse of 1860 the duration of totality was far less than this, and our observers in Spain had in no instance more than 3½ minutes during which to observe the phenomena which are presented during total eclipse. It is also obvious that, in the middle of the totality, the obscurity will be far greater than in the eclipse of 1860, since the extent by which the moon's disk extends beyond that of the sun will be nearly twice as great. We may, therefore, hope that important information will be derived from the observation of this

great eclipse, respecting the interesting phenomena which attend the total obscuration of the sun; and, in particular, it is to be hoped that something will be learned respecting the nature of those colored prominences and floating masses which become visible round the moon's disk. It is possible that changes which may be in progress in the figure or position of the prominences may be detected by a comparison of views taken by different observers; since a considerable interval will elapse between the passage of the shadow over the western and eastern parts of the Indian peninsula.

It is satisfactory to learn that two expeditions, well provided with instruments, have proceeded to India from England for the purpose of observing the great eclipse.

The first, organized by Major Tennant, has been sent out under the auspices of the Royal Astronomical Society. "An application was made to the India Office, to bear the expense of establishment and instrumental means." For photography, a silvered glass reflector has been provided. Three men of the Royal Engineers have been trained at Mr. Delarue's Observatory at Cranford, in the processes of taking small negatives, enlarging, and etching them on glass. The reflector, of 9¼ inches diameter, is a Newtonian, and is mounted equatorially and driven by clock-work. Mr. Browning has devoted much time and care to the construction of this instrument, and has been assisted by Mr. Delarue's advice and experience; in other words, all that science and skill could devise to render the instrument perfect has been applied to its construction. A telescope belonging to the Astronomical Society has been provided for spectroscopic researches, and one of the Greenwich telescopes has been adapted to the polarization apparatus.

The second expedition has been sent out by the Royal Society under Lieutenant John Herschel, a son of Sir John Herschel. Lieutenant Herschel has received instructions "to confine his attention to observations of the spectra of the corona and red prominences." He is provided with an equatorial telescope, five inches in aperture, for spectrum observations. Another telescope, three inches in aperture, has been provided

for observations for polarized light. Lastly, "four hand spectrum-telescopes, of the form constructed by Mr. Huggins for the observation of meteors, have been sent for use by observers stationed at different places along the central line of the eclipse."

The French Government has sent out M. Jansen, at the head of a well-appointed expedition. A Prussian observing party has also been sent out to Aden. The Pope sends out the Jesuit priest and astronomer Father Secchi. A plan was formed for an expedition of Dutch observers, who were to view the eclipse from some part of the Dutch East Indian possessions; but we understand that this plan is not likely to be carried out, having been formed too late to enable all the requisite preparations to be made. Mr. Pogson, the superintendent of the Madras Observatory, will head a third English expedition. He has been supplied by Mr. Huggins with spectroscopes and instruments for observing the polarization of light from the corona and colored prominences.

It will be a great disappointment to all who take interest in the science of astronomy if unfavorable weather, or other unforeseen circumstances, should interfere with the success of these well-appointed expeditions. If all should go well, we may look for results of extreme interest and importance. Information respecting the quality, movements, and variations of figure of colored prominences around the solar disk can hardly fail to be of great value to the students of solar physics. The examination of the corona also promises results of interest. And it is just possible that in an eclipse of this magnitude something may be learnt of the nature and habits of the zodiacal light in the neighborhood of the sun's body.

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HON. ANSON BURLINGAME.

At the present time there is probably no man so prominently before the public, or who claims so large a share of attention in the political world, as the Hon. Anson Burlingame, a portrait of whom forms the embellishment for this number of the *ECLECTIC*.

At the head of a mission the most important, perhaps, in the annals of

diplomacy, this child of the Republic comes back to us after a few years' absence, the herald of a new epoch, the inaugurator of a revolution the most momentuous which the East has seen for two thousand years, and which must have a marked influence on the politics and prosperity of every civilized nation.

For the first time the Muse of History is called upon to record the fraternizing of two civilizations which have hitherto revolved in such different orbits that they might have belonged to separate planets.

The East, which the Caucasian race has sought since the days of Alexander, the land of Romance and of Magic, of all that is marvellous in story or renowned in art, the Empire whose head is crowned with the hoar of thirty centuries, now throws aside its armor of exclusiveness, and steps to the side of the West in the march of progress.

The mind falters in attempting to forecast the effect which this embassy, if successful, must have upon the future of the World, nor will our limits allow us to enter the arena of speculation; but few can doubt that it is the most important event which has yet been inscribed upon the annals of this century. Coming, as it does, just when man with the aid of electricity is defying both time and space, narrowing seas and ignoring continents; when our Pacific Railway is making us, as it were, next door neighbors to China, and Commerce bridging the interjacent gulf, it must take the front rank in those coincidences of history which assume the majesty of Providential dispensations. Its importance cannot be exaggerated. It is the introduction of a new and tremendous element into the activities of the world—an element which is destined to change the aspect of general civilization, and is to tell with peculiar potency upon the interests of our own Republic.

No such compliment was ever paid to a country as this to the United States, no such honors were ever conferred upon a citizen as these conferred upon Anson Burlingame. He comes the Representative of one third of the human race, and in his train are the highest dignitaries and most profound statesmen of the oldest Empire in the world.

A sketch of his past life, we trust, will prove interesting to our readers.

Anson Burlingame was born in New Berlin, N. Y., November 14, 1822. His youth was spent on the Western frontiers, at one time acting with surveying parties, at another participating in making Indian treaties, far beyond the confines of civilization. The foundation of his education was laid in the Branch University of Michigan, but he subsequently removed to Harvard College, in Massachusetts, where, in 1846, he graduated, taking the degree of LL.B. He immediately opened a law-office in Boston, the firm being Briggs & Burlingame.

During the campaign of 1848, Mr. Burlingame first entered the arena of politics, taking an active part in the Free Soil movement, and afterward identifying himself with the Republican party. In 1852 he was elected to the State Senate, and in 1853 a member of the Convention for revising the Constitution of Massachusetts. This same year he was sent to the House of Representatives from Boston and Cambridge, and served six years.

Mr. Burlingame's most celebrated speech while in Congress was his scathing denunciation of the infamous assault upon Senator Charles Sumner. For this Preston S. Brooks of South Carolina sent him a challenge, which he accepted, naming rifles as the weapons. Mr. Brooks, however, failed to respond.

Shortly after the accession of Mr. Lincoln to the Presidency, he appointed Mr. Burlingame Minister to Austria and subsequently to China. His diplomacy at the latter court is well known. He laid the foundation of the "Coöperative policy" which guarantees the autonomy of China, and led the opposition to the "Concession doctrine" which, if persisted in, would have resulted in the disruption of the Empire. That the Chinese Prime Minister appreciated his services is evident from this unexampled honor bestowed upon him. Mr. Burlingame was on the point of returning to the United States when the mission was unexpectedly tendered him by Prince Kung, and accepted by him after consultation with his colleagues.

"Prince Kung came in solemn state to the United States Legation, and presented the

Imperial decree, which bears date November 26, 1867, and is written on heavy yellow parchment, wrapped in yellow brocade satin, the Imperial color, and encased in a yellow box. He has given him the title of Ambassador, and clothed him with the most ample powers."

The mission arrived in the United States about the 1st of June. Its objects may best be explained by himself in his speech to the House of Representatives, on the occasion of his official reception. In reply to a very flattering welcome by Speaker Colfax, he said:—

*Mr. Speaker*:—On behalf of my associates and myself, I thank you for this warm and unusual reception. It transcends all personal compliment. It is the greeting of one great people by another. It is the Occident and the Orient for the first time in that electric contact whose touch makes the whole world akin. It is the meeting of two civilizations which have hitherto revolved in separate spheres. It is a mighty revolution. Let us hope, sir, that it will go on without those convulsions which are too apt to mark great changes in human affairs. Let us hope that it will be achieved without the shedding of one drop of human blood. We are for peace. We come not with the beat of the drum, nor with martial tread, though representing the latent power of eighty millions of fighting men. We are the heralds of good-will. We seek for China that equality without which nations and men are degraded. We seek not only the good of China, but we seek your good and the good of all mankind. We do this in no sentimental sense; we would be practical as the toiling millions whom we represent. We invite you to a broader trade; we invite you to a more intimate examination of the structure of Chinese civilization; we invite you to a better appreciation of the manners of that people, their temperance, their patience, their habits of scholarship, their competitive examination, their high culture of tea and silk; and we shall ask for them from you modern science, which has taken its great development within the memory of man, and the holy doctrines of our Christian faith. It is for the West to say what our reception shall be: it is for the West to say whether or not it was sincere when it continued for a long time to invite China to a more intimate relation with it: it is for the West to say whether it is for a fair and open policy, or for one founded on prejudice and on that assumption of superiority which is justified neither by physical ability nor moral education. The people of the United States have responded through their Executive, and this House through their Speaker, with a unanimity and nobility of sentiment which makes me proud of the civilization in which I was raised, and



glad to see it passed in review by the scholars and statesmen of China. I trust, sir, that the American people will abide by that sentiment, and I do hope it is but an earnest of that spirit which will meet us on the shores of the distant seas, and on the banks of the beautiful rivers, which you, sir, have named. Thanking the House for this reception, and you, sir, for the felicitous and able manner in which you have expressed its welcome, we await such further action as the proprieties of the occasion may require.

On June 23d he received a grand banquet in the city of New York.

The treaty which he has been negotiating was ratified by the unanimous voice of the Senate on July 24, and in the evening of the same day Mr. Burlingame gave a grand reception and banquet to both houses of Congress.

During the first week in August he will be the recipient of civic and military honors in Boston, and sails for England on the 19th.

His mission includes all the great treaty powers of Europe, which he will visit before his return to China.

## POETRY.

### OLD SONGS.

THE Songs of old, they come to us, and take possession of our heart;  
The words are rude, the measure strange, devoid of ornament or art,  
And yet they touch a deeper depth—bring warmer tears to fill the eyes—  
And hold a sweeter, stronger charm than finer songs in finer guise.

Their words were gathered on brown moors, amid the heather belled and red;  
Or where green ferns and mosses draped the mountain torrent's rocky bed;  
Or where in woodlands gray the groups of yellow primrose loved to blow;  
Or in the field where white moonshine lay glistening on fresh fallen snow.

Their tunes were borrowed from the birds that sang at eve upon the trees;  
Or where the surges charged the cliff, swift rising from the foam-flecked seas;  
Or where the winds made bitter wail above old graves in churchyards lone;  
Or where in foxgloves summer bees were sounding their deep monotone.

And these combined, the songs were made by men who knew the midnight foe;  
Who caught the arrow on the shield, and swung the sharp sword's fatal blow;  
Who held the helm of rolling ships, and steered their course by ice-clefts bare;  
Who hunted wolves upon the hills, or fronted lions in their lair.

And some were writ by women whose white hands were wet with salt tears' rain,  
Keeping a drear sad watch at home for those that never came again;  
Who broke their hearts in dungeons deep of gloomy castles closely pent,  
Or withered slow in foreign lands, doomed to a life-long banishment.

And these old Songs bear in them now the spirit of the writers' days:  
Each word a well of their old life which rises as the tune we raise;  
And lo! there flows from them to us the feeling, be it stern or sweet,  
And with its added volume makes our smaller, shallower lives complete.

### THE BRIDE'S DREAM.

BY J. E. CARPENTER.

THE young bride she is dreaming,  
Ah! who that dream can tell?  
It may be of some loved one  
Ere falsehood broke the spell;  
It may be of the bridegroom  
Who watches by her side,  
And deems she *must* be happy  
Because she is his bride.  
Oh! if that be her dreaming  
May time ne'er break the spell,  
But the tears flow in her slumber,  
And who that dream can tell?

The young bride she is dreaming!  
Of the future, or the past?  
But she'll wake, and smiles around her  
Like a ray of sunshine cast;  
Her pride will keep her silent,  
She may speak of other themes,  
But her lips will never whisper  
What she wept for in her dreams.  
Oh! if those dreams were happy  
May time ne'er break the spell,  
But the tears fell in her slumber,  
And who that dream can tell?

### THE "HULKS" IN THE MEDWAY.

IN that wild river "Medway" called,  
May many a quaint old hulk be seen  
Armored half-up in sea-weed green,  
With limpets thickly on't installed.

Rude figure-heads, with many a scar  
 Indented, look a hundred ways,  
 And seem in grief for long-gone days,  
 When proudly rode the man-o'-war.

From portholes whence the cannon's eye  
 Once flashed defiance on our foes,  
 Some fragrant flower soft incense throws,  
 And gentle looks peer lovingly.

The sentry by the gangway stands,  
 But what he guards one cannot tell,  
 For all about is peaceable  
 As syvan lakes of fairy lands.

Upon the deck where warrior feet  
 Once hurried vengeful to and fro,  
 I've seen a butterfly swoop low,  
 And nestle on a wall-flower sweet.

Ah, thoughts that well might wake a sigh,  
 Steal o'er my soul the while I gaze  
 On these old wrecks of other days,  
 That in the lonely Midway lie.

#### EXCELSIOR.

PUT out thy talents to their use—  
 Lay nothing by to rust;  
 Give vulgar ignorance thy scorn,  
 And innocence thy trust.  
 Rise to thy proper place in life—  
 Trample upon all sin,  
 But still the gentle hand hold out  
 To help the wanderer in.  
 So live in faith and noble deed,  
 Till earth returns to earth—  
 So live that men shall mark the time  
 Gave such a mortal birth.

#### A SEA-SHELL.

Cool lips of shells, sing, Sea-shell, warm and sweet,  
 Of ripples curling on the creamy beach,  
 Of soft waves singing in each other's ear,  
 Small wavelet kissing one another's feet,  
 Where flakes of foam make music, a low speech  
 Tenderly sad to hear.

Tell me of half-formed little broken words,  
 Sung by the ripples to the still sea flowers  
 In silent, sleeping, tideless deeps of sea;  
 For there the flowers have voices like to birds,  
 That sing full throated in this world of ours  
 On each melodious tree.

Not now, not now, sweet shell, some other day  
 Tell me of sighings on the lonely shore,  
 And seas that sob to birds that scream above;  
 Tell me not now of earth grown weak and gray,  
 Nor longing for the things that come no more,  
 Nor any broken love.

To me thy breathing bears another tone,  
 Of fresh pool currents running under sea,  
 And happy laughter of the sunny spray:—  
 Ah! hearest thou the words that are thine own,  
 Know'st thou the message that they bear to me,  
 The things they seem to say?

Ah! Sea-shell, it is this—"The soft blue deep,  
 Which thrills with a heart that knows thee and  
 is kind,  
 Sighed for thy sorrow, now it laughs with  
 thee;  
 Love is a secret which man cannot keep,  
 Hide it from heaven and the heedless wind,  
 But trust it with the sea!"

A. C. BRADLEY.

#### MOUTH TO EAR.

NAY, speak no ill, a kindly word  
 Can never leave a sting behind;  
 And, oh, to breathe each tale we've heard,  
 Is far beneath a noble mind;  
 For oft a better seed is sown  
 By choosing thus a kinder plan;  
 For if but little good we know,  
 Let's speak of all the good we can.

Give me the heart that fain would hide,  
 Would fain another's fault efface,  
 How can it please our human pride  
 To prove humanity but base!  
 No, let it reach a higher mode,  
 A nobler estimate of man;  
 Be earnest in the search of good,  
 And speak of all the best we can.

Then speak no ill, but intent be  
 To other's failings as your own!  
 If you're the first a fault to see,  
 Be not the first to make it known.  
 For life is but a passing day,  
 No lips can tell how brief the stay;  
 Be earnest in the search of good,  
 And speak of all the best we may.

#### THE MOUNTAIN BROOK.

LAUGH of the mountain,  
 Joyous and free,  
 Beautiful fountain,  
 Life is in thee!  
 Spirit of memory,  
 Freshener of spring,  
 Freedom adorning,  
 Bright on the wing;  
 Thy crystal escaping  
 Beneath banks of bloom,  
 Thy tiny waves leaping  
 'Mid gales of perfume,  
 Reflect every feature,  
 The gentle, the fair—  
 The mirror of nature  
 And soother of care!  
 The sweet lark salutes thee  
 With notes from on high,  
 The lyre of the free,  
 The untaught harmony!  
 The jasmine and rose  
 Their fragrance bestow,  
 Where the freshness o'erflows  
 Of thy waves as they go;  
 While the weary of strife,  
 As they downcast pass by,  
 Seem to gather new life  
 From thy minstrelsy!

Laugh of the mountain,  
Joyous and free,  
Beautiful fountain,  
Sweet music to me!

## LONDON LYRICS.

## A DRAWING-ROOM BALLAD.

In the dawn of a golden morrow  
May Marguerite went away;  
Nought of sin or sorrow  
Had touched that perfumed clay.

Each morning sweeter and whiter,  
In the city dark she grew;  
Here as in places brighter,  
The clouds rain down such dew.

The splendor and power of Nature  
Rank'd little in her sight;  
She was a city creature,  
Smiling by candlelight.

The nooks where Love might meet her,  
Fashion from sunshine shrouds;  
Yet her hue than roses was sweeter,  
Her motion was like a cloud's.

Wherever the gas glared brightly,  
May Marguerite tript and flew,  
O'er the flower'd carpet as lightly  
As if it blossom'd and blew.

Under her gentle seeing,  
In her delicate little hand,  
They placed the Book of Being,  
To read and understand.

The Book was mighty and olden,  
Yea, worn and eaten with age;  
Though the letters looked great and golden,  
She could not read a page.

The letters fluttered before her,  
And all looked sweetly wild;  
Death saw her, and bent o'er her,  
As she pouted her lips and smiled.

And weary a little with tracing  
The Book, she look'd aside,  
And lightly smiling, and placing  
A flower in its leaves, she died.

She died—but her sweetness fled not,  
As fly the things of power,—  
For the Book wherein she read not  
Is the sweeter for the flower.

ROBERT BUCHANAN.

## NOTES ON BOOKS.

*Democracy in the United States.* New York: D. APPLETON & Co. This work is a kind of handbook for leading the masses through the tortuosities of political science. The great principles of republican government, the foundation-stones upon which have been raised the structure of human rights, are discussed briefly, but lucidly, and their

application to the policy of our government, from its formation up to the present day, is pointed out with unflinching sagacity.

The author is a man thoroughly conversant with the Constitution and constitutional questions, and has a profound practical knowledge of the complexities of our administration. On the many questions which have agitated, and still agitate, the country, his opinions, whether others may deem them correct or not, are expressed with the boldness of conscientious conviction; and he evinces a calm and dispassionate reflection in discussing these vexed questions which raises him above the level of a mere partisan.

We must confess to some disappointment on the perusal of the book; not that the author does not successfully accomplish his object, but because we had expected something different. We had rather permitted ourselves to hope that it would be a philosophical continuation of *De Tocqueville's* memorable treatise.

However, the work as it is, is much better adapted to the purpose it is intended to subserve—the enlightenment of the unthinking masses on political issues past and present. Very few can rise from its perusal without a clearer understanding of our institutions and their operation during the past eighty years.

The author takes ground of deadly and unpromising antagonism to the Republican party, whose principles he traces back, through the Whig, Federalist, and Tory parties, to the Royalists of the Revolution. Centralization of power and class legislation are the indictments which he brings against them, and the tenacity with which he clings to this as the explanation of all their acts, reminds us of that ubiquitous slavery which haunted Greeley through every page of his "American Conflict." Collateral causes and issues were completely overshadowed by that black phantom.

The accusation of designing to secede at the time of the Embargo Law and during the War of 1812, is brought clearly and unflinchingly against New England, and whatever we may think of his arguments, he has eliminated some very decisive facts from the obscurity which has always hung round the Hartford Convention.

On the late Civil War he propounds opinions which are calculated to startle the orthodox voters of the country. He says, "The Republican party so managed as to invite the war, and caused it to be conducted and continued for political effect, and especially to reelect a Republican Administration. It might have been successfully closed in half the time consumed, and with less than half the loss of men, and with less than half the expense, but for the management to retain political power in the hands of the Republican party. Mr. Lincoln and the Republican party are responsible for this unnecessary prolongation of the war. They knew it and understood it."

This can hardly be considered just. All parties in the country are responsible for the war, and it is useless for any one of them to attempt to shirk that responsibility.

The defect of the work before us, setting aside the evident haste with which it was prepared, is the number of useless biographies which encumber the plan. Some of them, such as those of Johnson,

Lincoln, Jefferson, &c., are perhaps necessary, and certainly valuable; but by far the greater number had best have been left out. They give to the work a chaotic appearance, as if the author had become entangled in a labyrinth, without any distinct idea of the way before him, while their principal objects seems to be to give a eulogistic epitaph to departed friends and Democrats.

Still, despite this, "Democracy in the United States" must take a high rank as a campaign book. It gives valuable political information to the people, and this enlightenment of the masses is the only guarantee of the stability of our institutions.

*Good Stories.* Boston: TICKNOR & FIELDS. Some months ago a company in England announced their intention of publishing a series of stories selected from every language. That this would be one of the most beneficial enterprises ever undertaken by a publishing house no one can question. Many of the best stories extant are inaccessible to nine-tenths of the reading world, either from not being translated, or if translated, from being published in such a desultory manner as to escape the notice of the public. Whether the English house carried out their design we have not heard; but the enterprising firm of Ticknor & Fields are now presenting to the American public a series which will cover the whole field of literature.

The book before us is part IV., and contains "From Hand to Mouth," "Count Ernest's Home," "Little Peg O'Shaughnessy," and "A Shabby-genteel Story"—all excellent, and the second and last eminently so.

"Count Ernest's Home" is a story which, interesting in itself, is written with a purity and flexibility of style altogether exceptional. The voluble, devoted, and sensitive Milo Flor takes hold at once upon the affections of the reader. "A Shabby-genteel Story" is in Thackeray's best style, and we think that not even in his more pretentious works does he show more markedly his peculiar ability for representing the actions of mankind in ordinary circumstances, or analyzing the motives of those actions.

We are altogether in favor of this class of literature, particularly for the young.

We think of a story as Poe thought of a poem, that it should be read at one sitting. The imagination becomes exhausted and the attention relaxed when too long a demand is made upon them, and a child is apt to look upon a large book very much as Mr. Wegg contemplated the evening readings from "The Decline and Fall of the Rooshan Empire."

The books are cheap, within the reach of all, and are gotten up in the neat and elegant style which characterize even the cheaper productions of that liberal and well-known house.

*Was it a Ghost?* Boston: LORING, Publisher. What conceivable object the author had in placing this maudlin polemic before the public we are at a loss to determine. The purpose which he himself avows of awakening the energies of the police to renewed attempts to discover the perpetrator of the Bussy Wood murder, though good in itself, scarcely explains the *olla podrida* of marvel, controversy, and queries before us. If, as he hints mysteriously, he has an "idea" of the plan pursued by the murderer and even of the murderer

himself, why not communicate it to detectives and satisfy his own outraged humanity and vindicate the majesty of the law?

*Was it a Ghost?* The author seems as little able to answer the question as the public.

He saw in the shadows of the evening, on the borders of the wood, what appeared to be the figure of a man, twenty feet distant. This man looked earnestly toward the spot where the girl was murdered, and when the author threatened to shoot him, wheeled and disappeared in a twinkling (which, by the way, was very natural). Because the dogs did not tear him, and because the author returned from the house after the lapse of twenty minutes, and "walking directly from the spot to the wall" failed to discover the mysterious stranger, he concludes that it must of necessity be a ghostly visitant.

We are not one of those disposed to ridicule and ignore any well-attested fact because without the pale of our experience, and there are many ghost stories which it were more RATIONAL to believe than to deny, but this is neither a ghost nor a marvel. We fancy that had the narrator displayed the same courage on the moment, which he takes care to inform us he did afterward, the mystery would have been solved. His attempt to intimidate public criticism by a constant fanfaronade, is simply gratuitous insolence.

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#### ART.

*A Winter Landscape.*—Chromo-lithography has been misconceived by many to be simply a cheap process for the reproduction of cheap pictures, adapted for illustrations, prints, &c., but for nothing better.

But in the hands of Mr. Prang, of Boston, it assumes the dignity of a Fine Art. Some of his chromos, such as the "Magdalena," "Easter Morning," and "Barefooted Boy," are chaste in coloring, and excellent in execution, scarcely to be distinguished from the originals.

Mr. Prang takes a profound personal interest in his art, is constantly on the alert for a possible improvement, and is assisted by a corps of artists able, discriminating, and experienced. Under such circumstances as these, a failure would be more surprising than the remarkable success which he has achieved.

We have just sat down from an admiring inspection of his last production, "A Winter Landscape," original by Morviller. This we also consider one of his best. No brilliancy of color, nor bold contrast, but a dull, wan, winterish look, suggestive in an eminent degree of the "Fierce North." The picture is not a striking one, but is "sketched from nature, and the picture's true." The chromo cannot be distinguished from a painting in oils, save by a connoisseur.

Chromo-Lithography, when thus conscientiously applied, must have a profound influence upon the tastes of the people. It brings the productions of genius within the reach of the masses; and contact with the beautiful must ever elevate the sentiments.

As an art it must take rank with printing—the latter popularized literature, the former must eventually domesticate painting among the peo-



ple, and stimulate a love of the Fine Arts while giving the capacity to appreciate them.

#### SCIENCE.

*Weight of the Earth.*—Copernicus first distinctly demonstrated that the apparent terrestrial planet was really a free and independent material mass moving in a definable path through space. Then Newton explained that this independent mass moved through space because it was substantial and heavy, and because it was unsupported by props and chains; that, in fact, as a massive body, it is falling for ever through the void; but that as it falls, it sweeps around the sun in a never-ending circuit, attracted toward it by magnetic-like energy, but kept off from it by the force of its centrifugal movement. Next, Suel and Pincard measured the dimensions of the heavy and falling mass, and found that it was a spherical body, with a girdle, 25,000 miles. Subsequently to this, Bailey contrived a pair of scales that enabled him approximately to weigh the vast sphere; and he ascertained that it had within itself somewhere about 1,256,195,970,000,000,000,000 tons of matter. To these discoveries Foucault has recently added demonstration to the actual senses, of the fact that the massive sphere is whirling on itself as it falls through space and round the sun, so that point after point of its vast surface is brought in succession into the genial influence of its sunshine; and inverting atmosphere of commingled vapor and air is made to present clouds, winds and rain, and the inverted surface to bear vegetable forms and animated creatures in great diversity. The world is then a large solid sphere, invested with a loosened shell of transparent, elastic, easily moving vapor, and whirling through space within the domains of sunshine; so that, by the combined action of the transparent mobile vapor, and the stimulant sunshine, organized creatures may grow and live on its surface, and those vital changes may be diffused, amongst which conscious and mental life stand as the highest result.

*The Probable Date of the Glacial Period.*—Under this title Mr. James Croll has contributed to the *Philosophical Magazine* (May) a paper of much interest to the speculative geologist. Mr. Croll has not concluded his remarks in this memoir, but promises to do so in another. Nevertheless, we have much pleasure in calling attention to a most important paper on one of the grandest problems that can engage the attention of the man of science. We may mention, that Mr. Croll looks upon denudation as the key to the solution of the question—How old is the earth? He thinks that accurate ideas of denudation can only be formed when enough evidence concerning the quantity of sediment carried away by our rivers is accumulated.

*Gas for Steam Boilers.*—Gas is being used to some extent in London, for generating steam in small boilers. In the Thames granaries it is thus used, the steam being raised from cold water in twenty minutes, and maintained by a single burner. The cost is trifling, and labor and space are economised. A boiler on this principle was

recently exhibited at the *séance* of the Institute of Civil Engineers, the burners being on Bunsen's principle.

Two north polar expeditions are about to sail: one sent out by Prussia, the other by Sweden. In the latter instance, the government furnishes a screw-steamer, provisioned for a year, and properly manned, but the general expenses are paid by a few merchants of Gottenburg. The party will sail about the middle of July, pass along the western coast of Spitzbergen, and then steer for the Pole. We trust their enterprise will be successful. In any case, science may be expected to gain something, for among the explorers there will be naturalists, geologists, and observers of physical phenomena. One of the matters they are to investigate is, whether the land in those high northern latitudes is really slowly rising, as is asserted by some geologists. To this end, they will take accurate measurements of the height of some well-known parts of the coast of Spitzbergen, and bore holes at the water-line in the face of the cliffs. Then, if, twenty years hence, the heights are higher, and the holes are above the water-line, there will be good evidence that the land is rising.

There has been laid before the Franklin Institute, Philadelphia, a self-tightening steel attachment for railway joints, which is so constructed that, by means of a spiral spring, it always holds the ends of the rails firmly in their place. It is said that the spring cannot be removed without proper tools, which diminishes the chance of wilful mischief, and a further advantage is, that it "tightens up" whenever a train passes over it. The importance of this invention will be obvious to any one who has stood by the side of a railway and watched one of the joints during the passing of a train at full speed. The force with which the wheel strikes even a small projection is amazing; and in this fact we have perhaps the explanation of many accidents which could not be accounted for. It is easy to understand how such a shock should loosen the joints, break a wheel-tire, or drive a train off the rails.

It has been for some time known to entomologists that fossil insects are found in some of the coal-beds in this country and in Westphalia. They have recently been discovered in the coal of Nova Scotia, but of a size which would render them suitable companions to the gigantic reptiles of the early geological period. These Nova Scotian *ephemerina* measured full seven inches across the wings, and the noise which millions of such creatures produced while fluttering over the swamps of that carboniferous region must have been more like a roar than a hum; and what a plentiful supply of food their larvae must have furnished to the primeval fishes! Four specimens of insects found in New Brunswick are believed to be the very oldest yet discovered; one of them had a musical apparatus similar to that of the cricket, which, in the words of the finder, brings to our imagination "the thrill and hum of insect-life that enlivened the solitudes of those strange old forests."

The *Journal* of the Society contains an account of the Norwegian method of cooking, which is well worth attention. After the meat, or any other article, has boiled for five minutes, the

saucapan is taken from the fire, and shut up close in a felt-lined wooden box. The felt being a non-conducting substance, keeps in the heat. So, if cottagers would try it, they might get the five minutes' boiling on their breakfast-fire, shut up the pot in the box, and then the whole family might go to their work till dinner-time, and take no further thought about the cooking. But when dinner-time comes, the food will be found to have cooked itself by its own heat, and will be smoking hot. And, as is stated, "a laborer may carry his dinner, in a little box, to the fields, and while he is working the dinner will be cooking, and he will have the benefit of a hot meal, instead of a cold one;" greatly to the increase of his working-power, and benefit to himself and his employer.

*The Nebula of  $\eta$  Argus.*—A paper has been communicated to the Astronomical Society by Mr. Abbott, in which it is alleged that the remarkable nebula around  $\eta$  Argus has varied considerably in figure during the past few years. Sir John Herschel, however, is not disposed to consider Mr. Abbott's reasoning conclusive. The very great difference in magnifying and light-gathering power between a 5-feet achromatic and the great reflector made use of by Sir John Herschel, seems quite sufficient to account for the difference between the views of the nebula which accompany Mr. Abbott's paper and the noble drawing in Herschel's "Capo Observations."

While on the subject of this great irregular nebula, we may mention, that Lieut. Herschel has analyzed it with the spectroscope supplied by the Royal Society to the Eclipsæ expedition, of which he is the head. The spectrum of the nebula consists of three bright lines, so that this nebula—like the great Orion nebula—is gaseous.

We hear of five expeditions sent out to view the great Eclipse. First there are the two sent out by the Royal Society and the Royal Astronomical Society. Prussia sends out an expedition to Aden; M. Jansen heads one sent out by the French Government; and the Pope sends out Father Secchi. Mr. Posson, of the Madras Observatory, will also take part in observing the great Eclipse.

*A Globe of Mars.*—At a late meeting of the Astronomical Society, Mr. Browning exhibited a globe of Mars, on which the lands and seas of this interesting planet were marked in, and named as in Proctor's chart of Mars. With the exception of Phillips' globe of Mars, this is, we believe, the first attempt to illustrate the varying appearance of Mars by means of a martial globe.

*Venus and Saturn.*—Venus has been very favorably situated for observation during the past few months, and many observers have detected markings on this beautiful planet. Mercury has also been observed under favorable circumstances during several weeks of June.

Saturn, though low, has been an interesting object of observation. His rings are now well open. We do not hear of any discoveries worth recording. Indeed, it is unlikely that any observations made when the planet is in the wintry half of the zodiac should reveal peculiarities undetected when the ring was last seen at its full opening—in the oppositions of 1855–1857, during

which it rose more than  $40^\circ$  higher above the horizon than at present.

*The War-Paint of the Prehistoric Man.*—In a memoir some time since presented to the Royal Academy of Belgium, M. Ed. Dupont states that he had found, among specimens of ologites from the banks of the Lesse, some which exhibited markings similar to those described by MM. Christy and Lartet, as found in specimens of red hæmatite, from the caverns of Perigord. M. Dupont concludes that the Troglodytes of the caverns of the Lesse ground down those minerals to obtain a reddish powder, which seems to be a favorite color among all savages, and which, mixed with grease, was probably employed to paint their bodies, as the American Indians do nowadays.

*Man in the Miocene Period.*—At the meeting of the French Academy, on April 20, a sealed memoir by MM. Garrigou and Fillhol was opened and read. The matter refers to a statement which we have already published, viz. that the existence of bones split longitudinally, in certain of the miocene deposits, proves the existence of man in that age of the world.

*A Volcanic Circle.*—In a letter to M. Saint Claire Deville, M. Fouqué makes some observations which confirm the opinions of M. E. de Beaumont on the subject of volcanic areas. M. Fouqué says, relative to the earthquake shocks at Cephalonia and Methilin, that if we unite by an arc of a great circle the points of the island at which the shocks have been chiefly felt, we obtain a curve which passes by Etna and Teneriffe, and this curve will be found to pass through the plane known as the eruptive plane of the method.

*Liquid Fuel for Steam Boilers.*—Capt. Selwyn, R.N., read a paper on this subject, before the Institute of Naval Architects, advocating the use of creosote, or "dead earth oil." This hydrocarbon does not inflame below  $240^\circ$ , and being heavier than sea-water, was, in his opinion, free from the dangerous properties which militated against the use of petroleum as a fuel for steam ships. The present price of creosote is 13s. 9d. per ton. Its present production in the British Islands, as a waste product, probably reaches 60 millions gallons annually. In heating power Capt. Selwyn estimates 1 ton of creosote to be equal to 3 tons of coal, and he stated that an ordinary Cornish boiler had been at work, night and day, since Christmas, doing more duty with 230 gallons of liquid fuel per day, than it had previously done with 3 tons of coal. The evaporation of water amounted to 23 lbs. per pound of fuel. In another instance a still higher efficiency was reached. Mr. C. J. Richardson has formed a theory that the water, or steam, introduced with the liquid fuel, and which seems necessary to its successful use, is decomposed, and the heat of combustion of the hydrogen added to that of the liquid hydrocarbons. He has constructed a grate, in which he says the decomposition of the water, and the burning of its gases, can be seen. It is difficult to conceive that any additional heating effect can be gained in this way, but it is the theory of one who has worked earnestly and practically at the question, and whose experience has led him to believe that "within twenty years, a locomotive or marine engine using coal or coke

as fuel, will be looked upon as a curiosity, a relic of the olden time, as well as a rare piece of stupidity."

*Flying Machine.*—Mr. Wenham stated, at a recent meeting of the Aeronautical Society, that one of its members, Mr. Spencer, had already constructed an apparatus, by the aid of which he had raised himself from the ground level, and performed a horizontal flight of 100 feet.

*Australian Pearls.*—The pearl fishery grounds recently discovered in Western Australia extend along the coast for one thousand miles. Upward of sixty tons of pearl oysters were fished up in December last, and sold for £100 per ton.

*Old Gold.*—In digging for the foundation of a house in the Rue des Drapiers, at Brussels, there has just been found, at a depth of several yards, a copper vessel containing gold coins, very ancient and very roughly made, as well as jewels of primitive and barbarous handiwork.

*Insects.*—Insects are largely endowed with the faculty of sight; for their eyes, though unable to turn, are infinitely multiplied, and compensate by quantity for their want of motion. To give an idea of the numbers some orders possess, I may mention that to one species of butterfly, by no means among the largest, is allotted nearly 35,000 eyes. These are distributed over every part of the body, and thus, whatever may be the position of the animal, no danger can approach unperceived, as a sentinel keeps watch in every quarter.

*Much of the world's history can never be known;* Herodotus, the father of history, travelled in Upper Egypt, and found the stupendous ruins of cities without inhabitant, and in nearly their present condition.

*The New Substitute for Silver.*—Minargent, recently invented in Paris, and which may be compared to silver, possesses, according to the London *Mining Journal*, nine-tenths of its whiteness, malleability, ductility, tenacity, sonorousness, and density, while it has a superior metallic lustre, wears better, is less liable to be acted on by the emanations of sulphuretted hydrogen, and is less fusible than silver. Minargent may be used for all purposes to which silver or other white metals or alloys are applicable. It is composed of one thousand parts of pure copper, seven hundred parts of pure nickel, fifty parts of pure tungsten, ten parts of pure aluminium. The inventors do not, however, limit themselves to the exact proportions given. The chief features of the minargent consist in the introduction in the alloy of pure tungsten and pure aluminium, and also the considerable proportion of nickel which they have succeeded in alloying with the aluminium. The metal is formed into ingots, and moulded in sand in the ordinary way.

*The German Arctic Expedition.*—Dr. Petermann, the well-known geographer, has recently issued the following appeal in relation to the German Arctic Expedition:—

"The geography and exploration of the Polar regions of our earth have aroused great interest among all civilized nations for centuries; and this feeling has revived during the past three years in the naval and scientific circles of England, France, Sweden, America and Germany. Active and energetic men of our time are actuated by a strong desire to see the still entirely unknown centre of

these regions thoroughly explored, since without that knowledge all geographical science of our earth remains imperfect and disconnected, and is deficient in the keystone of its foundation. Last year American whalers in mere sailing vessels penetrated into the Arctic central regions and discovered a new polar country. In the course of this summer the Swedes will send a new expedition to Spitzbergen, fitted out by a single town—Gatborg—of only forty thousand inhabitants. It has been recently most warmly supported by the King and the government, in order that it may penetrate as far as the Pole. To assist Captain Lambert in equipping a French expedition, France has opened a national subscription, headed by the Emperor Napoleon with fifty thousand francs, which has produced the sum of one hundred and forty thousand francs up to the 1st of April."

#### VARIETIES.

*Central Pacific Railroad.*—By an advertisement which appeared in our last number, it would be noticed that the Overland Railroad to the Pacific may be expected to be completed during 1869, if not by the middle thereof. The rails are now laid from the Missouri river to the Rocky Mountains, 660 miles, and from the Bay of San Francisco across the Sierra Nevadas to Humboldt Lake, 300 miles, leaving a gap of 800 miles between the two approaching sections. This will be very rapidly closed.

The American people have responded very liberally to the appeal for capital for these roads. The demand for the Central Pacific Company's gold bonds (16 per cent. first mortgage), has been so great, that the company have felt it proper to advance the price on the 4th of June last to 103 and the accrued interest, in currency, at which rate they are selling freely.

*Lighting Street Lamps by Electricity.*—The *New York Times* contains an account of a simple but ingenious machine for this purpose, which it is proposed to employ in the American cities. It is a simple, small machine, placed in each lamp-post and connected by insulated wires with a central point, where the operator can, by simply starting the clock-work attached to the batteries, at once open the cocks in each lamp, and light up a whole city in the twinkling of an eye, or put out the lights at his pleasure. It is said, that 38,000 dollars is the estimate for labor and lighting of the city street lights. The labor and the amount of gas that would be saved in the time allowed for lighting and putting out, and the amount that is now used on bright moonlight nights, constitute an aggregate which no doubt would more than pay for the whole expense of introducing the improvement for the first year.

*Artificial Gems.*—The *Chemical News* states that the base of these gems, as patented by the superintendent of the Royal Porcelain Works at Berlin, is a flux obtained by melting together 6 drachms of carbonate of soda, 2 drachms burnt borax, 1 drachm saltpetre, 3 drachms minium, and 1½ ounces of purest white sand. To imitate in color, but of course not in composition, the following minerals, add to the flux the ingredients named in connection with each gem:—*Sapphire*, 10 grains carbonate of cobalt.—*Opal*, 10 grains

oxide of cobalt, 15 grains oxide of manganese, and from 20 to 30 grains protoxide of iron.—*Amethyst*, 4 to 5 grains carbonate of peroxide of manganese.—*Gold Topaz*, 30 grains of oxide of uranium.—*Emerald*, 20 grains protoxide of iron, and 10 grains carbonate of copper.

*Alum in Wine*.—In a recent number of the *Gazette Médicale de Lyon*, M. le Dr. Barbier calls attention to the fact that many of the cheap wines, especially clarets, are largely adulterated with alum. In one instance which came under his notice, he had been treating a whole family for acute gastralgia, but eventually discovered that the affection of the stomach was due to the wine his patients had been using; on analysis this wine was found to contain as much as two drachms of alum in the bottle. In commenting on this case, the *Chemical News* (June 5) says: "We have ourselves obtained samples of so-called pure claret, which we have reason to believe contained a considerable quantity of alum; it is therefore evidently necessary for those who are accustomed to drink these wines, to have some guarantee of their purity."

*Recently a remarkable event* occurred in Western Kansas. Two aerolites fell, on the 6th, near the Solomon River. The noise and jar was felt for 70 miles. The two meteors were seen, on a June afternoon, many miles distant, like two balls of fire, ere they struck the earth, and the shock shook it like any earthquake. Were they from Vesuvius or the moon?

*The Lord Chancellors of England*.—The *Pall Mall Gazette* says: "A statement which has lately gone the round of the papers to the effect that Lord Brougham's death has opened the way for Lord Chelmsford's receiving an ex-Lord Chancellor's pension of £5,000 a year is quite erroneous. There is no limit to the number of ex-Lord Chancellors' pensions. Lord Chelmsford has been in the enjoyment of his pension since he left the woolsack; and the nation will save £5,000 a year by Lord Brougham's death. There are now four ex-Lord Chancellors enjoying pensions of £5,000 a year—Lord St. Leonards, Lord Cranworth, Lord Westbury and Lord Chelmsford."

*Emigration to the South*.—The efforts which some of the Southern States have been making to secure emigration from Europe are meeting with considerable success. South Carolina and Virginia have been the most forward in this movement, and they are consequently the first to reap the reward for such labors. We noticed some time ago the arrival of a considerable number of German immigrants at Charleston, S. C., and there are now in Virginia agents sent out from Switzerland and Holland to see about the prospects for planting colonies from those countries in that State. The agent from Switzerland is sent by the Swiss Emigrant Society, and is empowered to buy 100,000 acres of land, adapted to grape-culture and fruit-growing, and the agent from Holland is looking for a place for several hundred families who propose to leave Holland in the spring. The more intelligent Southerners have got over the idea that it is necessary for all their lands to be held by a few persons, and are beginning to see that the accession of labor and capital will be of positive advantage to them. They will realize this more and more as they get out more completely from the narrow-mindedness

occasioned by their devotedness to slavery, and the labor and capital and ballots of immigrants from the North and from Europe will have no small part in developing the resources of the South, and preparing it for filling its place in the future as a component part of the greatest and most prosperous republic in the world.

*The Railroad to the Pacific*.—That the railroad now being built from Omaha, Nebraska, to San Francisco, is one of the marvels of this age of great events, is a trite saying, but one whose truth is confirmed by every day's reports from "the front," where twenty thousand laborers are digging and laying the iron continental highway. We speak of "the front" and not of the "end," for the Union Pacific Railroad may be said to have but one end, and that one rests upon the bank of the Missouri. The other end is an indefinite point, a shifting spot in the surveyed route; here to-day, and away beyond to-morrow. Where the last rail was laid a week ago is now a score of miles in the rear, and what is the further end of the track as we write will be miles behind the track-layers when these lines reach the eye of our readers. Let the figures of the past tell the story of what is being done in the present. Two years ago the Union Pacific Road had just started upon its way; last December 540 miles were completed and in running order. One hundred and twenty miles have been built since the frost was out of the ground this year, and 250 more miles will be finished before 1869, if we may believe the promises of the contractors, whose performances hitherto have not only equalled, but exceeded their predictions. Then, with the completion of the promised 300 miles of the Central Pacific Road, now being vigorously pushed from the Pacific Coast toward Salt Lake, there will remain a gap of not more than 600 miles to be built next year. With the record of past and present achievements before us, we may confidently believe the assurance of the managers of the Union Pacific, that this gap will be entirely closed in time for our brothers and sons upon the Pacific Coast to return to us by rail to eat their Christmas dinner in a year from the coming holiday-time.

No text-books ever taught us so much concerning the western half of the American continent as the surveyors and builders of the Union Pacific have done and are doing. We have been accustomed to think of the Rocky Mountains as a series of impassable crags, frightful precipices, and unattainable cañons. The builders of this road have reached and crossed the summit at an elevation of 8,262 feet above sea-level, without any grade greater than 90 feet to the mile, and that only for a short distance. What has been called the "Great American Desert" has been found to have such rich agricultural resources that Nebraska, which lies almost wholly within the confines of that supposititious "Desert," produces more wheat to the acre than any other State of the Union. That popular faith in this enterprise is strong is attested by the fact that the public has, within a little more than a year, invested more than \$17,000,000 in its securities, and continue to look upon the bonds of this company as equalled only by governments in all the elements of security and profit.







"THE HUGENOTS".

*Designed for the Children Magazine by Arthur Dove.*

